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THE

GARDENER'S MAGAZINE,

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REGISTER

OF

RURAL AND DOMESTIC IMPROVEMENT:

COMPRISING

TREATISES ON LANDSCAPE GARDENING,
ARBORICULTURE, FLORICULTURE, HORTICULTURE,
AGRICULTURE, RURAL ARCHITECTURE,
GARDEN STRUCTURES,
PLANS OF GARDENS AND COUNTRY RESIDENCES,
SUBURBAN VILLAS, &c.

ALSO

LISTS OF NEW AND RARE PLANTS, FRUITS AND VEGETABLES.

CONDUCTED BY

J. C. LOUDON, F.L.S. H.S. &c.

AUTHOR OF THE ENCYCLOPÆDIAS OF GARDENING, OF AGRICULTURE, &c.

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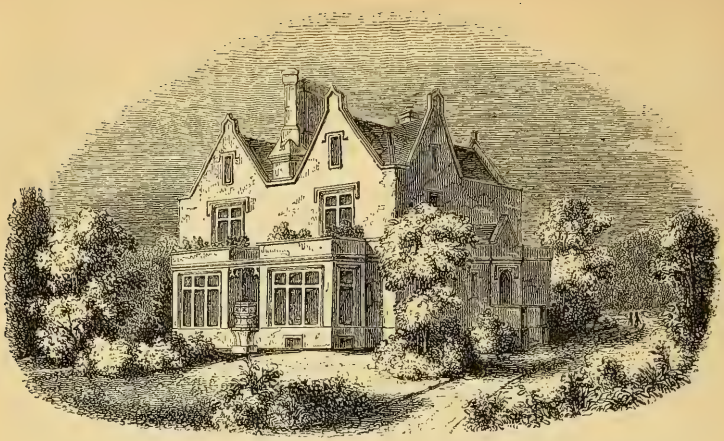

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THE SUBURBAN GARDENER,

AND

VILLA COMPANION:

COMPRISING

THE CHOICE OF A SUBURBAN OR VILLA RESIDENCE, OR OF A SITUATION ON WHICH TO FORM ONE;

THE ARRANGEMENT AND FURNISHING OF THE HOUSE;

THE LAYING OUT, PLANTING, AND GENERAL CULTURE OF THE GARDEN AND GROUNDS;

AND THE MANAGEMENT OF THE VILLA FARM, INCLUDING THE DAIRY AND POULTRY.

THE WHOLE ADAPTED

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GARDENER'S MAGAZINE,

JANUARY, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *Brief Notices, made on several Occasions, when visiting some Noblemen's and Gentlemen's Seats, in the Autumn of* 1836. By THOMAS RUTGER.

As many of the places named below are, in some instances, amply described in the Ninth Volume of this Magazine, I have endeavoured to avoid repetition, and only noticed such things as may be considered useful and interesting to the gardening world in general, as well as to those who may feel a particular interest in the places visited.

Ditton Park. — In taking a view of Ditton Park, the seat of Lord Montagu, I was particularly struck with the fine and lofty timber trees which are growing in a soil which seems to be well adapted for all the kinds indigenous to Britain. Mr. Hutchinson, the gardener, pointed out a lime which, he said, measured nearly 130 ft. in height. In the park are some declining oaks of gigantic dimensions. In surveying the lawns, divided, as they are, into several sections, by trees and shrubs of stately growth, it occurred to me that very few places at an equal distance from the metropolis could be found to offer such advantages for the introduction of all the choice and newly introduced trees and plants, which are now becoming the ornaments of many of the principal gentlemen's seats and villas in this country. Here they would find ample protection, as well as a soil apparently well suited to their growth. Near one of the small lawns is a green-house, or conservatory, with a trellis at the back, furnished with young orange trees, which appear healthy: in front of the conservatory is the flower-garden, in a situation which I approve of, it being pretty near the house, and, at the same, time so separated from the lawns as not to interfere with them. The flower-garden is in the Dutch style, with an erection in the centre for seats, which is covered with ivy. On one side of the flower-garden there is a handsome pyramid, or cone, of the giant ivy, mixed with the Ayrshire rose, and the Virginian creeper, supported by the re-

mains of a large red cedar, to the height of about 25 ft., which (particularly when the rose is in bloom) is much admired. On walking through the grounds, Mr. Hutchinson pointed out a small vista, through which, in the distance, is seen the statue of George III., erected on the summit of the rising ground, opposite the avenue in Windsor Park, and at a distance, in a straight line from Ditton Park, of about five miles. This was recently discovered by one of the labourers, who happened to be at work on a clump situate in the direct line of the vista through which it is seen: in a fine clear day the statue is perfectly visible. Upon the whole, I was much pleased with Ditton Park; not having seen, for many a long day, such a number of fine specimens of forest trees of all the different kinds, apparently competing with each other which should gain the preeminence in height and bulk of timber. At one corner of the mansion stand a horsechestnut and two other trees, which were severely scorched when the former mansion was burnt down, some twenty or more years ago; and, from their appearance, it would seem that the fire had actually laid hold of their leading branches. However, they have withstood the shock; and it is worthy of observation to see how rapidly the fine healthy new bark and wood are extending round the injured branches, and which, in a few years, will hide all defects; a proof, this, of the superior quality of the soil. Mr. Hutchinson very kindly received me with my friend, to whom he was before known; and the latter informed me that he saw considerable improvement in the kitchen-garden since he last visited Ditton Park. At the end of one of the houses, I observed three fine and vigorous young plants of the Brugmán*sia* suavèolens in full flower, nearly 3 ft. high, grown from early cuttings, and planted out in May.

Stoke Place; Colonel Vyse.— On entering the kitchen-garden, which stands on a fine loamy soil, I was immediately impressed with the luxuriance of the crops. The garden being long, it is divided into several compartments by cross walls, which, together with those at the sides, afford sufficient room for trees of all the kinds of fruits for which walls are necessary. The trees bore ample testimony to Mr. Patrick's (the gardener) skill in their treatment; the walls nearly all being literally covered from the top to the bottom with fine wood. A few of the peach trees had a slight attack of mildew this season; but, as it came on late, they will not suffer materially. I could not help admiring a wall of morello cherries, both as it respected the trees, and on account of the very full and fine crop of fruit which they bore. On viewing this garden, I was led to consider whether or not I had ever seen one equal to it; and the only one I could bring to mind that, in my opinion, approached near to it in excellence, was at Wyke House, near Brentford; which, some thirty years

ago, was considered as one of the best gardens round London. There the garden has also the advantage of a loamy soil, but, I think, of a less soapy nature than that at Stoke Place; and it may, in consequence, be somewhat less productive.

In taking a hasty view of the pleasure-ground, Mr. Patrick pointed out what had been done by him by way of improvement; such as enlarging the water, disposing of the walks, and undulating the ground in various places with the excavated soil accumulated by adding to the water, together with the necessary work in forming the clumps and borders, planting trees and shrubs, &c.; the whole of which must, I think, be highly appreciated by all who may visit this place. The earthed up elms and cedars, noticed during your tour here in 1833 (Vol. IX. p. 525.), are still in vigour, and were doubtless saved by the causes you mentioned; namely, that "the elms spread their roots to a great distance; and, as the earthing up does not extend far from their trunks, they may be saved by that circumstance." However, a fine large oak has fallen a victim to this mode of treatment. For a farther description of the place, your readers may refer to the above page, as my principal design, in this article, is to induce all gardeners to visit this place, who may have the opportunity to do so, as I think a sight of the kitchen-garden alone will well recompense them for their pains.

Stoke Farm. — On calling at Stoke Farm, the seat of Lord Sefton, I was pleased to learn that Mr. Oldacre was at home; and, looking at him now as a father in the gardening world, the kind reception I met with was very gratifying. He took me round the kitchen-garden, which has been enlarged at the north side, and a fine wall erected, with a slip at the back. His wall trees were in fine order; and he has some handsome young pear trees coming on against the walls, which, in a few years, will no doubt be much admired. His late crops of peas were admirable, to the perfection of which the soil seems to be peculiarly adapted. Here, as well as at several places in this neighbourhood, the *Brássica* tribe has suffered severely from an attack of insects, which seem to baffle every means taken to retard their ravages; and whole crops of broccoli, coleworts, &c., have been destroyed by myriads of these insects in the course of a few days. I hope Mr. Oldacre, or some one in his neighbourhood, will inform you more particularly as to the nature of this apparently new enemy which has made its appearance.* The grapes here were very fine, as were most of the other things that came under my notice. The orchard particularly attracted my attention, as the trees in it, by Mr. Oldacre's judicious mode of pruning,

* Since writing the above, I have received the *Gardener's Magazine* for October, and read the account at p. 553. of the new species of A'phis, which is, no doubt, the same as above alluded to.

present nearly a fac-simile of each other; forming fine round heads, with handsome boles, and most of them being loaded with fruit. Mr. Oldacre does not permit the branches of the trees to touch the ground, but, by pruning, keeps them about 3 ft. or 4 ft. from the surface. The family being at Stoke Farm, it was not convenient for me to have a view of the flower-gardens and grounds, which I could not help regretting; but, nevertheless, felt myself amply repaid by a sight of the kitchen-garden, and by the kind attention of Mr. Oldacre, who, as a kitchen-gardener, has for so many years preserved a high reputation.

Dropmore. — On approaching Dropmore from the Burnham side, my anticipations, as far as it regards the approach to a place of such celebrity, were not realised; the soil, apparently, not being congenial to the growth of fine English timber trees; and too few of them are to be seen to give that character to the place which is to be found in some others of less magnitude. To landscape-gardeners in general, I conceive that Dropmore, with regard to the scenery of its interior, does not yield that satisfaction which they may be led to expect from mere report; but to the admirers of Flora, in all her richest varieties of beauty and splendour, when heightened by the free introduction of architectural ornaments, such as vases, pedestals, statues, &c., it cannot fail to afford a rich repast. In short, there seems to be almost a redundancy of beauty and variety here, a description of which a transient visitor can scarcely attempt to give. Mr. Frost, with a limited number of hands, when compared with former years, perseveres with the utmost ardour in improvements, and in keeping up a perpetual succession of all that is most select, rare, and beautiful in the flower-garden and its appendages; to accomplish which thousands of pots must be necessary, in the course of the season, for a constant reserve, to replace such of the flowers as are dying off in the numerous clumps and borders which he has to supply. The pinetum is still progressing, and many specimens are to be seen thriving admirably, in a soil which seems better adapted for pines than for most of the indigenous and deciduous trees of Britain. Improvements in enlarging the water, and making rough banks with the excavated soil alluded to in Vol. III. p. 263., are still carrying on, at a great outlay of labour and expense; and, for convenience as well as for ornament, a bridge is to be constructed over a part of the water. Upon these rough banks the pinetum is extending, and eventually must give a character of no ordinary kind to that portion of the grounds. The cedar drive, as it is called, consisting of a winding avenue of the cedar of Lebanon of about one third of a mile in length, begins to assume a striking appearance. The trees are of about 25 years' growth, and are planted at a distance from each other sufficient to show their

beauty when arrived at maturity. At present, they may average about 25 ft. or 30 ft. in height, and are backed up by a plantation on each side.

As a matter of taste, perhaps some may think that, in some parts of the grounds at Dropmore, the transitions are too sudden, from those which are in high keeping, to those which are rough and nearly in a state of nature; but this could be easily remedied, should it be thought desirable. In the kitchen-garden, Mr. Frost has begun to try his skill at pine-growing, in which, I think, there is but little doubt of his succeeding, as his small young stock is in a fine healthy state, and promises to make fine plants for fruiting. I regretted much that the day was so far spent as to afford much less time than I desired, not only for viewing the premises, but also for conversing with Mr. Frost, whom I found very intelligent, and not less kind in his attentions. He has a nice little library, which augurs well.

Cliefden House. — The approach on the Dropmore side to Cliefden House, the seat of Sir George Warrender, is by a lodge; after passing which the road curves to the right, sheltered by trees on each side, for about a hundred yards; when it enters the grand avenue, and, with a turn to the left when it reaches the centre, proceeds in a straight line of about a quarter of a mile to the iron gates, on each side of which there is an iron palisade, attached to walls built at right angles, and extending on either side towards the extreme wings of the mansion. These walls, together with the house and palisades, form a large quadrangle, which may be considered as the court of honour. The avenue, with its broad road and wide verges, or rather slips, together with the mansion and court of honour, cannot fail to produce a striking effect on the visitor when entering on that side of the premises. The walls on each side of the quadrangle form parts of the boundaries of two gardens detached from each other, in which are carried on the forcing and growing of fruit, vegetables, &c. The lawn on the terrace side of the mansion (described in Vol. IX. p. 645.), and intended to be laid out as a flower-garden, remains *in statu quo.* Mr. Dodds retains his ardour as a florist as well as a gardener, and, apparently, excels in both. His pines were in fine condition; and he showed me a fine light-coloured seedling dahlia, which gained the first prize at the Englefield Green show, on the following day. On leaving Cliefden on the Taplow side, the road leads down, and winds through a woody glen, where there is a small lake, and some dressed ground. The trees here look fine; and Mr. Dodds has made some improvements in enlarging the water, &c. One thing struck me with regard to Cliefden; namely, that, to make a place of such a character complete, there should be at least two or three hundred acres of park attached to it. I observed, on a

piece of lawn at the commencement of the avenue near the lodge, some patches of *Erica vulgaris*, which, perhaps, to many might appear to look out of place; there could be no objection, however, to this plant being introduced as a skirting at each side of the avenue, close to the bottom of the branches of the trees.

Taplow House. — I was highly delighted with the grounds at Taplow House, the seat of Pascoe Grenfell, Esq.; and I know of no place of equal extent that could afford me greater satisfaction; but, as you have given in detail most of the beauties of this place (Vol. IX. p. 658.), I shall refrain, and only notice a few things which may be interesting to some of your readers. Mr. Springall is still here, and, I believe, enjoys the respect of all who know him. He is a good gardener, and indefatigable in his pursuits to bring to, and keep in, perfection all that comes under his management. The cones of pelargoniums noticed by you are more splendid than ever, and form very delightful objects on the lawn; but, as they are taken up every autumn, it is almost wonderful how they are so well kept, as to be brought out every spring, with little or no injury. I think Mr. Springall told me that now one or two of them were 7 ft. high, and $3\frac{1}{2}$ ft. in diameter. Mr. Springall, in common with many of his profession, is a lover of dahlias; but, perhaps, not so much in the way of a florist as some others; as he retains a prime dahlia, if a good border flower, as answering his purpose equally with any new variety that may turn up. Hence, he has many excellent varieties which, as show flowers, would be thought little of. His mode of enlivening the clumps of evergreens on the lawn, as well as the shrubberies which may chance to fall on the sides of the walks, may be worthy of notice, as being not generally adopted. He allows about 4 ft. space of border round the clumps, and along the shrubberies; which, during the summer, is well supplied with a portion of every thing that is showy and beautiful; and it is astonishing what effect he produces by this means. On one side of the lawn is a small oval flower-garden, quite in seclusion: the beds are on grass, and most of them filled with masses of the most choice flowering plants of the present day. This is a very pleasing retreat, in which there is a small recess with a seat, overhung with foliage. There was a beautiful cone of trained purple petunias on the lawn, which, with the cones of geraniums, and other tasteful devices, rendered the whole most delightful.

In walking round the kitchen-garden, I was arrested by the appearance of a fine and full crop of raspberries just coming in for gathering: this, on the first day of September, I thought a rare thing, particularly as I saw that they were not of the old double-bearing kind. Mr. Springall told me they were a distinct variety from any other, and that he received them, some years ago, from the north; but, nevertheless, that a different kind of

treatment was necessary than that of the common mode. It is this: — At the spring season, when the common kinds begin to shoot, these are all cut down nearly to the surface of the ground: the consequence is, that, instead of fruit, new shoots are produced, which in the autumn bring forth a crop. However, it is necessary, from this mode of procedure, to keep up a constant succession of young plants, as in two or three years, at most, the old ones will be worn out: hence Mr. Springall, every season, plants out two or three rows of young plants; which plan is, year after year, followed on through the quarter, at the same time destroying the old plants that have become useless. There are, doubtless, many gardeners who are acquainted with the above mode of producing a late crop of raspberries; but to such as are strangers to it the above may be useful. Here I saw a crop of the large-veined white beet, the leaves of which, I was given to understand, were used as a substitute for spinach, by first separating all the small veins from the leafy part, and then boiling it in the common way; and that the large white rib in the centre was used as a substitute for sea-kale. A friend of mine has since favoured me with a root of this plant; and I am willing to allow that the leaf, when separated from the veins, and well boiled, may be considered as a very good substitute for spinach; but I cannot speak so favourably of the midrib answering instead of sea-kale, as its flavour is far less delicate, and accompanied with a taste that is much less agreeable. But to return, Mr. Springall's peach trees under frames do him great credit: he has had an abundant crop of fine fruit this year; and the wood promises equal success for the ensuing season. On bidding adieu to Mr. Springall, I considered that I was parting from one who possessed that complete devotion to his calling, upon which success, in general, depends, and in which he has preeminently distinguished himself.

Cumberland Lodge Gardens. — The object of my visit to these gardens was principally to have a sight of the celebrated vine growing there; and my expectations, from what I had heard, were more than realised. I was informed by one, but which was contradicted by another, that this vine was raised from a cutting of the large vine at Hampton Court. Be this as it may, it is but of little consequence: it is sufficient to know that they are both of the black Hamburg kind. The vine at Cumberland Lodge Gardens is 25 years old, and is planted inside about midway from back to front, standing at nearly equal distances from each end of a house, which, by repeated lengthenings, is now 138 ft. long. The breadth of the house is 15 ft. The last addition to it was made at the eastern end, about a year ago; it will consequently take a year or two more before the vine will have completely filled that end of the house: when it has, I was informed, it is in contemplation to widen the house at the front,

in the same way as that has been done which is at Hampton Court. The vine is in a vigorous state, and has made fine long and strong wood this season, at that end of the house which was lengthened last. I was told there were about 2000 bunches hanging on it when I saw it. The berries were finely swelled, and coming to a good colour; and some of the bunches towards the eastern extremity of the plant, upon the youngest wood, must, I think, have weighed 2 lb. The sight was splendid, and left me no room for regret in going a few miles out of my way to see it. If the dimensions which have been given me of the house at Hampton Court be correct, namely, 72 ft. by 28 ft., it will be found that there are 54 square feet more in the area of the house at Cumberland Lodge, than in that at Hampton Court.

Hampton Court Gardens. — These gardens, now under the control of the Commissioners of Woods and Forests, and under the improving hand of Mr. Johnson, are renovating, and beginning to assume a more pleasing character than they did a few years ago. The fine broad walks are in good order, and most of them now appear nearly full of gravel, which has been effected by the addition of gravel at the sides, and lowering the verges. Mr. Johnson intends to proceed in this way until the whole are completed. The large middle walk, running lengthwise, and formerly of gravel, has been thrown into grass, which, I think, will be considered an improvement. The walks in the wilderness are also being renovated, and, when completed, will form fine shady promenades for the visitors. Mr. Johnson has been introducing as many of the climbing roses as he has been able to get against the long wall, which has been effected by budding chiefly upon the common china rose, in which he has been more than ordinarily successful. He finds a difficulty in bringing many of the showy herbaceous plants and annuals to that perfection which is desirable in the borders, on account of the numerous old yews, hollies, &c., that are growing there, and which, much as they may be considered in character with the place, prove highly detrimental to the flowers. The introduction of new soil for the herbaceous plants avails but little, as, by the time they get established, the roots of the trees are found penetrating through it in all directions, and thus robbing them of their intended nourishment. However, by Mr. Johnson's judicious management, no doubt all will be done that can be towards embellishment, and particularly with the assistance of such kinds of plants and flowers as will be found to be most in character with the place.

The number of visitors at Hampton Court during the summer months is almost beyond calculation. Sundays and Mondays are the principal days for mechanics, artisans, &c., who pour out of London in multitudes for a day's recreation. On these

days may be seen humble vehicles of all descriptions brimful of visitors, to the amount, on a fine day, of from two to three hundred: many of these are vans, which hold from twenty to twenty-five persons each.

The house which contains the large vine at Hampton Court, having been widened about 8 ft., the branches have been laid out so as cover the whole of the trellis beneath the glass; consequently, the bunches of grapes (whether they are so, or not) appear by far less numerous than heretofore: added to this, a kind of rust has spread itself over a vast number of the berries, which has prevented their swelling; so that, altogether, the vine with its fruit does not present such a striking effect now as it has done in former years. This disease, whatever it may be, has been still more fatal in its effects in a vinery at Bushy Park, in which nearly every bunch of grapes has been affected; and it has so prevented the fruit from swelling, as that the berries of the black Hamburg in some of the bunches are not larger than marrowfat peas. It seems that the disease is nearly, if not quite, confined to the late crops, as in a house adjoining, which has been forced, nothing of the kind has appeared. It is to be hoped that the cause of this disease will be ascertained, as, if not, and should it increase in future on the vine at Hampton Court, it must, in a few years, greatly detract, not only from the beauty, but from the value, of that celebrated vine.

Teddington. — In this comparatively quiet and peaceable village are several small places that are interesting, two of which have more particularly come under my view, namely, that of *Park House*, belonging to Miss Mercer; and *Teddington Grove*, the residence of J. M. Strachan, Esq. The former is comprised in less than four acres of ground, including the kitchen-garden, stables, &c. Considerable taste has been here displayed in the formation of the walks and shrubberies; and there is as much variety in them as could be well introduced into so small a place. The house, with a conservatory attached, is beautifully situated, immediately opposite the entrance to Bushy Park; and from the upper rooms there is a delightful view of the grand avenue leading to Hampton Court. Bushy Park may therefore be considered as a valuable appendage to this place. Unfortunately, for want of ground on the west side, the stables and kitchen-garden are so placed as to render it necessary to go through the pleasure-ground to get to them; which is objectionable, and should always be avoided if possible. Hence the lawn, which surrounds three sides of the house, is divided by a shrubbery, in order to have a walk through it as private as may be to the stables and kitchen-garden. One portion of the lawn, bounded by a shrubbery on one side, and a walk on the other, forms something like an oval of about 100 ft. in length, in the

centre of which stands a large Spanish chestnut, covering with its foliage nearly one third of the length of the oval; and on the verge of the same oval there is a large walnut tree. The other, and larger, portion of the lawn is studded with about a dozen fruit trees, consisting of two mulberry trees, two walnut trees, and the remainder with apples and pears. All this is so inconsistent with taste, that the bare mentioning of it is sufficient; and particularly in this case, where there are so many choice things in the shrubberies, that are on the point of being ruined unless removed; and Mr. Brownlee, the gardener, would doubtless be happy could he gain permission to have some of them transferred as embellishments to the lawn, in place of the trees above mentioned. He has already made considerable alterations and improvements in the walks and shrubberies since their original formation, and has more in contemplation, which he hopes he shall have permission to carry into execution. The beauty of this place might also be much heightened by the introduction of vases, and other embellishments, which might be procured at Mr. Austin's manufactory, in the New Road. Mr. Brownlee is zealous in his pursuit after dahlias, and, in proportion to the number he is able to grow, has been very successful, this season, in obtaining prizes at the shows in the neighbourhood.

The grounds at *Teddington Grove* are larger than those at Park House, and, consequently, capable of greater variety. It is situate on the side of the road, a little distance from the village of Teddington, on the Twickenham side; and from the upper rooms of the house there is a good view of the Thames and Richmond Hill. The kitchen-garden, forcing-houses, and frame ground lie contiguous to the stable-yard, which is always advantageous. A pretty good share of judgment has been here displayed in laying out the walks, shrubberies, and lawn. At the north side of the lawn there is a neat conservatory, fronted by a flower-garden, and partly surrounded by a shrubbery, the beds of which are on the grass at the south end. In the shrubbery, raised on a mound, stands a rustic summer-house, neatly constructed, partly in the Gothic style, from which through a vista is seen the Star and Garter on Richmond Hill. At the front of the summer-house there is another flower-garden on turf; and nearly adjoining, in a kind of recess, stands what has been an ornamental dairy; in front of which is a circular basin, surrounded by rockwork, with a fountain in its centre. In proceeding by the side of a sort of wilderness, a walk leads down to a tunnel, which they call the grotto, and which is constructed under the public road. This forms the approach to a field, round the verge of which a walk, backed up by a shrubbery, leads down to the Thames. On the lawn stands a very fine box tree, forming a complete cone of 27 yards round, and 14 ft. high; and another, which

forms part of the frontage of the shrubbery, measures in front 18 ft. in the line of the shrubbery, and is 16 ft. high. At the south end of the lawn grows a handsome round-headed variegated oak, about 30 ft. high; there are also two good specimens of the red cedar, one of which is about 30 ft. high; and likewise a handsome upright cypress, in full vigour, about 40 ft. high. Here are also some fine-growing plants of the gold and silver variegated holly, but, unfortunately, in situations where they do not appear to advantage. Fine specimens of Magnòl*ia* acuminàta and M. tripétala are growing on the lawn, and, in a few years, will make handsome trees. Cércis canadénsis grows well here, and there is one handsome specimen about 25 ft. high. In walking through the grounds I was pleased with the formation of the shrubberies, they being so disposed as to relieve each other, as well as the eye of the observer, and thus presenting a continued variety in passing onward through the walks of the place. Mr. Bear, the gardener, in common with his brother gardeners in this neighbourhood, grows some good dahlias; his camellias in the conservatory look extremely well; and he has grown some fine petunias and thunbergias in pots this year, trained to cone-shaped trellises, which were introduced at the dahlia show at Teddington, on Sept. 12., with considerable effect.

Mr. Steers of Teddington is considered a good grower of pines: his ground, containing about a quarter of an acre, is full of houses and pits; and from these he has ripened 700 fruit this year. His fruiting plants for next year are now (the 1st of October) in a fine healthy growing state. The fruiting-houses, at present empty, are in preparation to receive the plants from the pits, which have been shifted into the fruiting-pots for some time; he, therefore, has nothing to do farther in removing them, than to carry them, and at once to plunge them in the tan-beds, which is done without their being tied up. Mr. Steers occasionally keeps a few of the old stock of the queen pine over year, and on each suffers two suckers to remain, from which, in the following season, he says he cuts fruit of about 2½ lb. in weight. The largest queen pine he ever cut weighed 4 lb.; and, if he preserves his plants well through the coming winter, I think there is a probability of his having many nearly, if not quite, equal to that in weight. The compost which he uses appears very simple, being nothing more, apparently, than a light yellow rich loam, somewhat of a calcareous nature, with a small portion of old tan or vegetable mould mixed up with it towards the bottom of the pots. In turning out a few of the plants which had been potted about three weeks, the roots of several had made considerable progress towards covering the outside circle of the ball, and appeared as healthy as possible; the leaves, at the same time, exhibiting a breadth and verdure not often to be seen. Here, as

well as in all the places I have seen in this neighbourhood where pines are grown, the plants are quite free from insects of every description, which may be in a great measure attributed to the suckers and crowns being brought forward in dung heat, the steam of which destroys every thing of the kind. Mr. Steers says that it is of little consequence to him, in getting suckers or crowns from other places, whether they are clean or not; as, by first plunging them in dung heat, he is never after troubled with insects of any kind. His beds were all uniformly, or nearly so, of a milk-warm temperature.

Cambridge House. — On approaching Richmond from Twickenham, this place is situate on the right, near Richmond Bridge, and, of course, on the bank of the Thames. The house stands on a flat park-like lawn, of about sixty acres in extent, on which there are some fine handsome elms. The present proprietor is H. Bevan, Esq., who, since the purchase, a little more than two years ago, has made considerable improvements, among which are a new lodge entrance, and an approach to the house. The kitchen-garden contains about an acre and a half within the walls, in which Mr. Bevan has erected two good ranges of forcing-houses and four ranges of pits. One of the ranges, nearly 100 ft. in length, is divided into three compartments, which are appropriated for an early and late peach-house, and a grapery. The trellis under the glass for the early peach-house is continued up straight for nearly two thirds the length of the lights; and that for the late peach-house forms a complete quarter of a circle from the front; thus letting in a larger portion of sun and light to the trees at the back. The other range, for pineries, about 70 ft. long, is also divided into three, which appear admirably constructed for fruiting-houses. The four ranges of pits are in front of each other, and each about 40 ft. in length, and of different widths. The widest one, at the back, is for pines; and the others for melons, cucumbers, &c. All these pits are heated with dung linings, which are well covered all round with sloping shutters. The whole of these houses and pits are constructed in the most substantial manner, and, apparently, without regard to expense; much to the credit both of the proprietor, and of the person who gave the designs. All the houses are heated with hot water, which Mr. Wilson, the gardener, approves of beyond any other system of heating. Mr. Wilson practises largely the drilling system with his garden crops; which, while it gives a neatness in appearance, is highly advantageous for thinning and cleaning. On the side of the approach from the kitchen-garden towards the house, a lofty span-roofed orangery has been erected: its dimensions are 50 ft. long, by 25 ft. wide. The roof is hipped, or sloped back, at the ends; and half the roof at the back is of glass, and half

of slate. The house is warmed with hot water; but, on account of its loftiness, and of the quantity of glass used in its construction, the frost must be with difficulty kept out in severe weather. Attached to the mansion stands a conservatory, or green-house, which is constructed in a superior style when compared with the orangery. It is about 40 ft. long, with a span roof of glass, heightened at the top, by the upper range of lights on each side being raised on an upright range of glass constructed upon the extremity of the lower range, and supported by elliptical and ornamental iron brackets, which give a good relief, and particularly when they are clothed with creepers. This house has a stage in the centre, and is well furnished with plants; while, by the assistance of several ornamental devices, and a large vase containing gold fishes, it is rendered attractive, and forms a handsome appendage to the drawingroom.

The principal point of attraction from the grounds is the bank on the opposite side of the Thames, which, rising suddenly, forms Richmond Hill; the slope of which, interspersed as it is with villas, and covered with trees and shrubs of various kinds, presents to the eye one of the most charming views conceivable for so contracted a prospect.

On driving through Petersham, I was invited in to see a small place, the residence of R. Thorley, Esq., where I was pleasingly struck with a small orange grove, consisting of about fifty or more trees, neatly arranged in four rows; the highest of them being about 8 ft. Very many of these trees were loaded with fruit, and all of them in a good healthy state: some of them are of the blood-red, and others of different kinds of sweet oranges, the fruit from which are sent to the table. Mr. Jones, the gardener, may be reckoned a complete dahlia florist; and as such he has a regular, though small, dahlia ground of sixteen yards long by eleven yards wide, which is fancifully laid out in borders and walks with box edgings. He has gained several prizes this year. He has to struggle against a sandy soil for his peach border, but which he manages admirably, so as, in general, to have a full crop every year. In order to secure the bloom in the spring, he has a length of bunting for the whole of the wall, which is drawn up and let down at pleasure. The roots of his trees run under the gravel walk, which is parallel with the wall, leaving only about 5 ft. of border, on which scarcely anything is suffered to grow. This small portion of border is kept well mulched every summer, I think he said with cow-dung, which is afterwards pricked in with the fork. In dry summers, almost daily watering is resorted to, as otherwise the fruit would drop before it arrived at maturity. Mr. Jones is not particular about handsome training, but labours chiefly to have his wall filled; in which he succeeds extremely well; and, at the present time, little

of it is to be seen but what is well furnished with wood. Here are a plant-house and grapery; and, adjoining the latter, there is what is called the ball-room, but which is at present used for wintering the orange trees, for which it is very well adapted. This little place is the picture of neatness during the summer, and is particularly gay with flowers, especially along a line of border, which separates the peach wall from the view of the house.

(*To be continued.*)

ART. II. *On the Discrepancy of Terrestrial and Atmospheric Temperature, with regard to the Cultivation of Exotics, more particularly the Vine; and on the proper Application of Water, so as to render it a beneficial Agent in elevating the Temperature of the Soil.* By N.

MOST of the objects of British horticulture being natives of warmer climates than that to which they are transferred, it becomes an important study to afford them, by artificial means, a climate as nearly as possible approaching to that of their respective habitats. Hence many are placed so as to receive additional warmth, from the accumulation of solar heat, against walls, or some other intercepting medium; and this accumulation will be found to be in proportion to the privation of heat, which the medium, whatever it may be, occasions to the space or objects on the opposite side. We can, to a certain extent, divert the elements from one object to another; but, although we can do this to a great extent, we cannot unlimitedly: and better it is that such is the case, otherwise the surface of the earth, from the monopolisation of light, for instance, in some places, would have been rendered a chequer of light and darkness.

If, instead of a wall of opaque materials, a plane of perfectly translucent glass could be raised, no privation of heat would be the consequence as regards the north side; and, according to what is above stated, no accumulation towards the south would take place. The transparency of this plane, so beneficial under other circumstances, would, in this case, be totally unavailing in the acceleration of vegetation. Glass, highly transparent, when properly situated, has the property of transmitting nearly the whole of the solar rays to the interior of a house; and their heat, by diffusion, raises the interior atmosphere of the dwelling. This diffusion is, however, not unlimited; for the intensity of communicated heat must bear a relation to the proportion of the volume of air to that of the surface of glass; and will tend to diminish inversely as the former is increased in proportion to the latter. Most gardeners will agree that very wide houses

are objectionable; and many have experienced their ill effects. Those who have houses to erect would, therefore, do well to turn their attention to a thorough investigation of this subject, on which the result of one slight calculation may incline them to enter more seriously. Supposing, for the sake of easy numbers, one house to be 20 ft. high, and 20 ft. wide; and another to be 20 ft. high, and only 10 ft. wide: the contents of the former are exactly double those of the latter; and, at the same time, instead of containing double the surface of glass in its roof, it has scarcely one third more; being nearly in the proportion of 28 for the house of double volume, to, not 14, but 22, for the one of half the internal capacity. In the wide house, every square foot of glass has to heat upwards of 7 cubic feet of air; in the narrow house, about $4\frac{1}{2}$ ft.

In what may be termed the higher department of forcing, there are, perhaps, fewer objectionable points than in the lower scale; where the plants are not kept in pots, and are consequently liable to great discrepancy between their terrestrial and atmospheric temperatures. Much has been written on the latter; and in practice it has been found best to approximate it as nearly as possible to that climate in which the given species of exotic plants naturally acquires the highest perfection. Beyond this, nothing need or can be advanced; but, with regard to what may be termed *terrestrial* temperature, something useful may be stated. The vine, for instance, as regards temperature, may be, and often is, so situated as to have its shoots in the climate of Syria, whilst at the same time its roots are in that of Britain. Such being the case, there need be less surprise at the ill success which occasionally accompanies its cultivation, than at the reputed inexplicable causes of bad setting, shriveling, and shanking of the grapes. The mean temperature of the soil, or that portion of the earth extending to several feet below its surface, is nearly the same as the mean temperature of the incumbent atmosphere. The soil of England, so far as the generality of roots penetrate, may therefore be estimated at about 50° Fahr. for the average. In Armenia and Syria (which may be reckoned the native region of the vine, for there, since the remotest accounts of history, it has felt itself at home,) the mean temperature of the soil will not be below 60°; and in the growing season its temperature will, doubtless, be above 70°, corresponding with the temperature of the atmosphere which is imitated in the vineries of Britain; but forming a great discrepancy with the temperature of the soil of this country. But, although this will be allowed to be bad, still the worst of the evil remains to be noticed: the above is only a medium case of general occurrence; and, although some may not be so widely different as 10° in the action of temperature on root and branch, yet there are, in all probability,

a greater number of cases in which the difference is considerably increased, from various causes powerfully tending to lower the temperature of the border.

In order to illustrate some of the causes which have this tendency, let us make an experiment wherein the agencies bear close analogy to what actually occurs. Let a box, water-tight, be nearly filled with loose mould or peat, or sand, or even the composition of a vine border; let this be tolerably *dry*, in order to increase its capacity for water cooled to the temperature of 50°; then saturated with snow water a little above the freezing point. This process, with the aid of a frosty night, will bring the contents of the box below 40°, and is supposed to take place in the winter or early part of spring. If the box be 3 ft. deep, the sun's rays will not affect it far below the surface, since water is not easily heated from above; and, besides, the heat through the day will, at that season, be greatly counteracted by the cold at night. As the season advances, rain may be expected of a temperature above 60°; and this, under some circumstances, to be hereafter explained, would produce a very considerable effect. Unfortunately, however, the box was made water-tight; and its contents, being completely saturated with nearly gelid water, cold and heavy, and mechanically immovable by the descending warmer and lighter fluid, the latter must recede by the surface in quest of an unoccupied lower level, after producing only a slight effect on the surface of the contents of the box.

The analogy between this and a badly drained *outside* vine border is so obvious that it need not be traced: similarity might, indeed, be substituted for analogy. Nor is it necessary to point out the injurious consequences that must accrue to the forcing vine. He that is not sufficiently impressed with this, has only to imagine his feet to be plunged in the one temperature, and his body in the other: the bare idea of such will make him shudder.

Let us now, with the same box, and similar materials, endeavour to produce a different result; commencing by piercing the bottom, and making a complete drainage; and, further, keeping the contents as dry as possible, and neither exposing them to the sleety shower, nor placing them exterior to the front of the vinery, where it would receive an overshot of snow from the slippery roof; but letting the surface be snugly covered, or thatched from all such drenching, till genial showers of the temperature of 60° or more begin to fall. The latter may find it below 50°, but it is not likely to be much below. If it should be thus low, the water of the above warmth would percolate speedily from top to bottom, and communicate its heat during its progressive descent. The soil being dry, a portion of the water would be held by capillary attraction among the particles

of the former in the first instance; superabundance to this would be carried off by the drainage at the bottom, making room for a fresh supply of water, imparting a farther elevation of temperature, till the whole became ultimately on a par with the rain, or very nearly so.

This process might be greatly accelerated by stirring the surface, or inverting it, when well heated by the sun's rays, so as to turn up a fresh portion to their influence. A considerable heat might be *worked in* by this means, even to the depth of the upper roots of the plants, and farther than that penetrated by the rain; but, the presence of the latter being necessary in other respects, it becomes a useful and appropriate conveyer of heat to a greater depth among the roots than could be accomplished in the open ground otherwise than by its soft insinuation.

It is hoped that the preceding remarks will be the means of directing attention to the necessity of an approximation of terrestrial and atmospheric temperature as regards the cultivation of exotics, and particularly that of the vine; and also to the use of water as a medium by which an increase of terrestrial heat is speedily communicated, when the former is properly applied, that is, when it is of a higher temperature than the substances with which it is brought in contact; and to the negative injurious consequences which follow its application at a low temperature.

It is presumed that it will not be transgressing the limits of this Magazine, to mention some of the advantages which the agriculturist, and, consequently, mankind in general, may derive from operations of culture, when conducted on principles that are founded on a knowledge of the laws of nature. These laws produce the effects attempted to be exhibited in the preceding observations; for such they may properly be termed, being penned from the result of actual observation, and, therefore, not to be considered as mere theory.

The wastes of Britain might be made to support all the unemployed able-bodied poor; and also to repay the advance of capital necessary in the first instance, before any return could be expected. The return must result from a judicious system of drainage, keeping in view the principles I have stated. There are places so low, that drains will not act; yet human ingenuity might easily surmount this difficulty. There are, however, many slopes to which this objection is not applicable, which are yet declared to be so *cold*, that grain, &c., will not succeed on them, and, therefore, not at all likely to repay any expenditure. We will select a sample of such a situation, and that a very unfavourable one; viz. the sloping base of the north side of a hill. It is wet, and so cold, *from the descent of snow-water from the upper part of the hill*, that mosses, natives of the frigid regions, greatly abound on it. It is evident the first proceeding must

be to cut off, by a large drain or ditch, the communication of the mountain water, and render the intended fields insulated. The tract is then to be drained in the most obvious directions. By these proceedings, the character of the vegetation will begin to change, even before the surface is broken up by plough or spade. I mention the latter, for the land may now be considered redeemed for ever, with a little attention towards keeping the conduits in a clear state; and, therefore, may have a trenching bestowed upon it. The mosses would be annihilated, and even their seeds would not vegetate in a habitat so metamorphosed. This hitherto undisturbed tribe of vegetation would be resolved into vegetable mould, and afford excellent food for turnips, hay, or corn.

The distinction between warm and cold soils, bearing the same relation to the solar heat, will be nearly done away with, if we can render the cold soil so pervious as to enable us to deprive it of its store of gelid moisture, in order that it may imbibe the summer showers. Wheat succeeds in Morayshire, though not at all in parts of Scotland much farther south. That county suffers from the drought in the early part of the season, which shows it to be deprived then of all cold moisture; but, when the summer rains begin to fall, vegetation proceeds most rapidly; and the wheat grown in it brings a fair price in the London market. N.

ART. III. *Arboricultural Notices; or, Notices of new hardy Trees and Shrubs deserving of general Cultivation in useful or ornamental Plantations.*

SOME new ligneous plants have been raised from Nepal seeds in the Horticultural Society's Garden; though but few of them are sufficiently advanced to be either correctly named, or fit for distribution. That splendid plant, Leycestèr*ia* formòsa *Wall.* (*Arboretum Britannicum*, p. 1060., and our *fig.* 1.), is a most beautiful shrub when in a flowering state, from the contrast of the deep green hue of its stem and leaves with the purple colour of its large bracteas and berries. It was introduced into British gardens in 1824; and it flowered soon afterwards in the nursery of Messrs. Allen and Rogers at Battersea, whence specimens were sent to the late Mr. Sweet and Mr. G. Don. It is a rambling shrub, with the general appearance of a honeysuckle; and it will probably prove somewhat tender in this country; but, as it is easily propagated by cuttings, or by seeds, which it produces in abundance, a stock of plants might be kept in readiness to provide for accidental losses. Trained against a conservative wall, it

would have a brilliant effect in autumn; or it might even merit a place in a conservatory. As soon as the plants raised in the Horticultural Society's Garden are fit to distribute, this fine plant will probably find its way into all choice collections.

*A*cer *p*latanöìdes Lobèl*ii* (*Arboretum Britannicum*, p. 409.) is now in several British nurseries; and plants may also be procured from Messrs. Booth of Hamburg. It forms a fine ornamental tree, and well deserves a place in pleasure-grounds.

The mahonias, evergreen berberries, or ash berberries, of which there are four species, M. *A*quifòlium (*fig.* 2.), M. rèpens (*fig.* 3.), M. fasciculàris (*fig.* 4.), and M. nervòsa (*fig.* 5.), (all which figures are taken from our *Arboretum et Fruticetum Britannicum*), cannot be too strongly recommended. M. *A*quifòlium, a native of the north-west coast of

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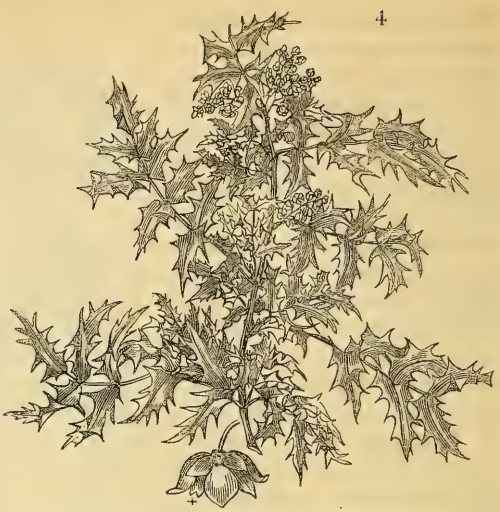
North America, and introduced by Douglas, according to Dr. Lindley, is, "perhaps the handsomest hardy evergreen we yet

possess. Its foliage is of a rich, deep, shining green, becoming purple in the winter. It bears fruit in some abundance, which consists of clusters of roundish black berries, having their surface covered with a rich violet bloom. It most resembles M. fasciculàris, from which its large shining leaves at once distinguish it." (*Penny Cyclop.*, iv. p. 262.)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It is propagated very slowly by layers; and, for some years, plants were sold in the nurseries at ten guineas each. Lately, however, a number of ripe seeds have been produced in England, or imported from America, through the Hudson's Bay Company; and from these many young plants have been raised in the Epsom, Fulham, and other nurseries; so that small plants in pots, which may be sent to all parts of the country, may now be obtained for 5*s.* each. In Prince's *Catalogue* for 1825, the price is stated as 25 dollars (5*l.* 5*s.*) each. (*Arb. Brit.*, p. 310.) Being so very hardy, and so very ornamental, it ought to be in every garden, from the Orkney Islands to the Land's End.

5

*C*lématis montàna *Arb. Brit.*, p. 245. figs. 23. and 24., is a beautiful species, introduced from the Himalayas by Lady Amherst, and quite hardy. It resembles *C.* flórida, but it is far more beautiful; producing numerous flowers, about the size and form of those of *A*nemòne sylvéstris. It well deserves a place among every collection of climbers.

*H*ypéricum chinénse *Arb. Brit.*, p. 399., the nurseryman's name of which is *H.* nepalénse, is a very handsome species, which has not yet flowered, but of which there are plants in the Horticultural Society's Garden, and in some nurseries.

Magnòl*ia* conspícua vars. Soulange*ana*, speciòsa, and Alexandrì*na* Arb. Brit., p. 278., though they have been in the country for some years, and flowered splendidly as standards in the climate of London, are not half so much planted as they ought to be. Plants are from 2*s.* 6*d.* to 5*s.* each. Some new varieties of M. grandiflòra, more hardy than any that have hitherto been produced, are expected this autumn from M. Le Roy et Fils, nurserymen at Angers, who cultivate the following varieties, some of which are unknown in this country. We give them in M. Le Roy's own words: —

M. grandiflòra des Anglais.
M. g. Mayardière, le plus fleurissant (the most abundant flowerer). [Most probably M. g. Maillardière. See *Arb. Brit.*, p. 263.]
M. g. Galissonière, le plus rustique (the most hardy). [M. le Roy informed us that this variety will bear several degrees of cold more than any of the others.]
M. g. strícta, or bouton blanc.
M. g. exoniénsis, à fleur demi-double.
M. g. longifòlia undulàta.
M. g. longíssima.
M. g. canaliculé, avec feuilles en gouttière.
M. g. rotundifòlia ordinaire.
M. g. rotundifòlia des Anglais.
M. g. rotundifòlia ferrugineuse.
M. g. floribúnda.
M. g. Semis de Bictin. [Probably from Bicton.]
M. g. *l*aurifòlia.
M. g. críspa.
M. g. subrotundifòlia.
M. g. fòliis variegàtis.
M. g. précoce du Masis [?précoce de Mars].

*T*ília americàna *Arb. Brit.*, p. 373., and its varieties, are far too much neglected. We wish our readers could see the fine tree of this species at White Knights, of which we have just had a beautiful drawing made by an artist whom we sent down on purpose.

*A*mýgdalus commùnis var. macrocárpa *Arb. Brit.*, p. 675., is a splendid shrubbery tree, and as hardy as the common almond. Its flowers are much larger, and of a paler colour, than those of the species; and they appear from a week to a fortnight earlier. The fruit is larger; and its kernel is so sweet, that the French call it *l'amandier des dames.* The tree has a more compact fastigiate habit than that of the common almond. Dwarf plants are 1*s.* 6*d.*, and standards 2*s.* 6*d.*, each.

*A*rmeniaca sibírica *Arb. Brit.*, p. 683., is the very earliest of all flowering trees in the neighbourhood of London. It seldom grows above 10 ft. high; and only requires to be better known, to be introduced into every suburban or small garden.

*C*érasus serrulàta *Arb. Brit.*, p. 701., and our *fig.* 6., is the most beautiful of all double-flowering cherries; and, though plants were scarce some years ago, they may now be had, in several of the nurseries, at the price of common fruit-trees:

care, however, must be taken that the ordinary double-flowering cherry is not received for it. When in leaf, it will be easily known by our figure.

6

Cýtisus æólicus Lindl., *Arb. Brit.*, and our *fig.* 7., is a beautiful species of *Cýtisus*, recently introduced by the Hon. F. Strangways, of which various historical and descriptive particulars will be found in a future page.

Lupìnus arbòreus *Arb. Brit.*, p. 649. This neglected shrub has been a long time in the country; and it is little noticed by amateurs, probably because it is often ill treated by gardeners. When intended for a standard shrub, it should be planted in a mass, 3 ft. or 4 ft. deep, of calcareous loamy soil, thoroughly drained; and the seeds sown where the plant is finally to remain. Transplanted plants seldom do much good, except when trained against a wall. In the court-yard of the gardener's house belonging to Pope's Villa at Twickenham, we have lately seen a singularly handsome bush of tree lupine treated in this manner. It has a clear single stem, apparently quite ligneous, with a rough bark, about 2 ft. high. The head reaches to the height of 8 ft., spreading widely, and hanging down gracefully on every side. It flowers profusely, and ripens seeds every year; and it has attained this degree of perfection in the short space of four years. Seeds may be procured of the principal seedsmen.

7

Pàv*ia* Arb. Brit., p. 469. The species and varieties of this genus cannot be too strongly recommended. Every gentleman, who has two trees of the common horsechestnut, ought to insist upon his gardener cutting in the head of one of them, and grafting it all over with Pàv*ia* rùbra *Arb. Brit.*, p. 469.; or with *Æ'sculus* rubicúnda *Arb. Brit.*, p. 467. That beautiful variety, Pàv*ia* rùbra péndula *Arb. Brit.*, p. 470., should not be neglected.

8

Amelánchier Arb. Brit., p. 874. All the species and varieties of this genus deserve to be better known. *A.* sanguínea *Arb. Brit.*, p. 875., and our *fig.* 8.; and *A.* flórida *Arb. Brit.*, p. 876., and our

fig. 9.; are charming small trees, which, fortunately, may now be had in most nurseries.

9

Cotoneáster *Arb. Brit.*, p. 869. There are four trees belonging to this genus, at once of surpassing beauty, and as hardy as if they were natives of Sweden. These are C. frígida, C. affìnis, C. acuminàta, and C. nummulària. Figures of the entire trees, and of the botanical specimens, are given in our *Arboretum Britannicum*; and there are plants to be had in several nurseries. The rapidity of growth of C. frígida and C. affìnis is quite astonishing: they are covered, in June, with a sheet of white blossom, and, in September, with a cloak of scarlet berries.

*C*ratæ`gus *Arb. Brit.*, p. 813. We do not know that we can add any thing to what we have already said in recommendation of this genus; though it is one we so greatly admire, that we could fill a magazine with its praises. We have, in the *Arboretum*, described above eighty sorts, and given engravings of about sixty sorts. Nevertheless, one variety escaped us; viz. *C*ratæ`gus punctàta var. brevispìna (*fig.* 10.), introduced by Douglas, and forming a handsome fastigiate tree, with large very dark purplish red fruit. There are two sorts of *C*ratæ`gus that we are particularly desirous should be introduced into every garden, and, if it were possible, into every hedge: the first, *C.* orientàlis var. sanguínea *Arb. Brit.*, p. 863. fig. 596., which has port-wine-coloured fruit, about the size, form, and colour of the red walnut gooseberry; and the other, *C.* tanacetifòlia var. Lee*àna* Arb. Brit., p. 864. fig. 599., and our *fig.* 11. This variety, which was raised from seed in the Hammersmith Nursery, has large yellow fruit; but it is chiefly remarkable for the size and marked character of its leaves, and for the timber-like habit of growth of the tree. The fine specimen of it from which our portrait, given in the *Arboretum Britannicum* for November, was taken stands in the Layton Nursery, where there are many curious articles utterly neglected. The only young plants of it that we know of are in that nursery, and in the Hammersmith Nursery; where, however, not one will be found next spring, if our hint is taken as we mean it to be. Plants of *C.* orientàlis var. sanguínea are in the Fulham Nursery, under the name of *C.* orientàlis. The only place that we know of where there are large fruit-bearing trees of this kind is in the grounds of the Bishop of London at Fulham Palace. There is, also, a very handsome tree in the London Horticultural Society's Garden;

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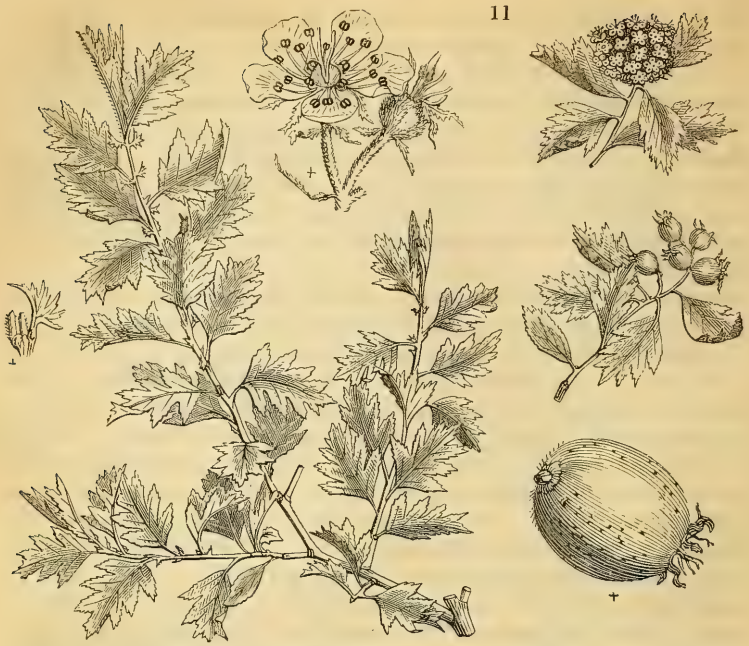

but, as it stands in an obscure point of the southern boundary hedge, and is concealed from the walk by pear and other fruit trees, we question if it has been seen in fruit by one in ten thousand of the visitors to the gardens.

Kagenéck*ia* *c*ratægöìdes *Arb. Brit.*, p. 934. fig. 657., is a very singular hardy evergreen, which ought to be propagated by nurserymen as extensively as the Gárry*a* ellíptica más (*fig.* 12.), already so strongly recommended in Vol. XI., p. 149.

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*R*ùbus micrácanthus, *R.* spectábilis, *R.* nutkànus, and *R.* odòrus, all described and figured in the *Arboretum Britannicum*, well deserve to be more extensively cultivated; and *S*piræ`a bélla and *S. a*riæfòlia, also described and figured in the *Arboretum Britannicum*, are not less so.

Escallòn*ia* Arb. Brit., p. 993. All the species of this genus are beautiful, and richly deserving of culture against a wall. The most showy, both for its foliage and its flowers, is E. montevidénsis *Arb. Brit.*, p. 993., and our *fig.* 13.

E. illinìta *Lindl.* (*fig.* 14.) is a remarkably hardy species, with broad leaves and white flowers, which has been described in a former page. South of London, there are few shrubs which

would make a more beautiful covering for a bower, or arcade of trellis-work, or a naked wall, than E. floribúnda or E. montevidénsis. A plant trained to a single stem till it had attained the height of 10 ft. or 12 ft., and then allowed to spread over a parasol of wire, would form a singular and beautiful object. What adds much to the charm of the two species last mentioned is, that they form powerful attractions to bees; and bees, when seen busily at work, with their cheerful hum, convey the ideas of active employment, industry, and happiness.

13

*H*amamèlis virgínica *Arb. Brit.*, p. 1007., is one of the very few trees which, in the climate of Britain, continue in flower throughout the winter. The sexes are borne on different plants; and both are in the Twickenham Botanic Garden. The female plant comes into blossom about a month later than the male plant, and continues longer in flower. Hence the advantage of having both sexes in the same garden. There is a curious tree of this species at Ham House, of which *fig.* 15., taken after it had lost most of its leaves, is drawn to a scale of 1 in. to 12 ft.

14

Mutís*ia* Arb. Brit., 1072. This is a very singular and exceedingly interesting genus of shrubby climbers, with leaves terminating in tendrils, by the prehension of which the stems are supported. The species introduced are quite hardy when trained against a wall; and of M. latifòlia *Arb. Brit.*, p. 1072., and our *fig.* 16., there are plants at 5*s.* each in the Clapton Nursery.

*R*hododéndron *Arb. Brit.*, p. 1097. There are many new varieties and hybrids belonging to this genus, which is now considered as including Azàlea. We refer to our *Arboretum*, or to the nurserymen's catalogues, for a list of names. In the warmest parts of Devonshire, the camellia and the hybrid tree rhododendron would make beautiful garden hedges.

Rìbes Arb. Brit., p. 968. We have described forty-three species, and figured above thirty species, of this interesting genus. Every one is aware of the beauty of *R.* sanguíneum, *R.* speciòsum, and *R.* aúreum: but the long bunches of flowers of the *R.* multiflòrum *Arb. Brit.*, p. 980., and our *fig.* 17.; and the value of the fruit of *R.* níveum *Arb. Brit.*, p. 970., and our *fig.* 18.; are little known. *R.* níveum, which grows to the height of 7 ft. or 8 ft., was introduced from the north-west coast of North America, by Douglas. The bush bears some similarity to

R. triflòrum; and the flowers are white, abundant, and ornamental; but the berry of *R.* níveum is about the size of that of the black currant, and of the same deep rich purple. It resembles a small smooth gooseberry; "but its flavour is very different: it is entirely destitute of the flatness which is more or less perceptible in even the best gooseberries; in lieu of which it has a rich, subacid, vinous, rather perfumed flavour, which is extremely agreeable. The fruit is rather too acid to be eaten raw; but, when ripe, it makes delicious tarts, and would, probably, afford an excellent means of improving the common gooseberry by hybridising." (*Lindl.* in *Bot. Reg.*, Aug. 1834.) *R.* níveum, apart from these considerations (which, however, will probably lead to its culture in the kitchen-garden), is, from its white pendulous flowers, a valuable addition to our ornamental hardy shrubs.

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Sambùcus nìgra var. laciniàta *Arb. Brit.*, p. 1028., and our *fig.* 19., is a beautiful tree, neglected for no other reason, apparently, than that it has been a long time in the country, and is sold cheap. But what shall we say to the general neglect which there seems to be of *S.* racemòsa *Arb. Brit.*, p. 1031., and our *fig.* 20.? This tree has a splendid appearance when covered with its panicles of fine large scarlet fruit. Captain S. E. Cook, who found it in abundance in Spain, informs us that the panicles of fruit resemble miniature bunches of grapes of the most brilliant scarlet; and that, when in perfection, he thinks it the most beautiful wild fruit he has ever seen. Its large leaves, with their deeply serrated pinnæ, are, also, very ornamental. It grows as freely as the common elder, and deserves a place in every collection; though it is very seldom found, in British gardens, of such a size as to display its beauty. We should think it would succeed if budded on the common elder; and, as that species is abundant in many

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places, plants might be trained to a single stem, and budded with *S.* racemòsa, standard high. The price of plants, in the London nurseries, is 1*s.* 6*d.* each. (*Arb. Brit.*, p. 1031.)

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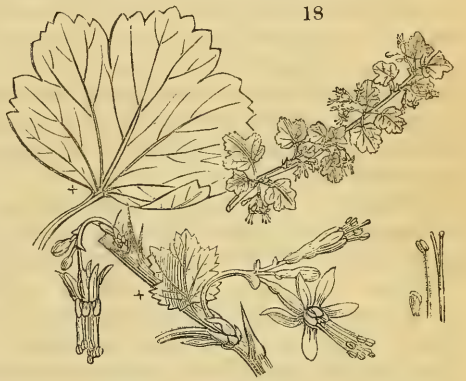
Syríngа Josikæ`*a* Arb. Brit., p. 1210., is a new and beautiful species of lilac, of which plants may already be procured in some of the nurseries.

Fráxinus americàna *Arb. Brit.*, p. 1232. Those who have only seen this species, and its numerous varieties in the Horticultural Society's Garden, or in the arboretum of the Messrs. Loddiges, can form no idea of the grandeur and beauty of the tree, when of a considerable size, and grown in free air near water. We are led to make this remark from the beauty and freshness of a collection which was lately sent to us by Mr. Brooks, from his arboretum at Flitwick House. It is singular that there are no old American ash trees in the splendid collection of old exotic trees and shrubs at Syon. The highest American ash that we know of is that figured in our *Arboretum* from a specimen at Ham House; where, however, the tree, being on a gravelly soil, suffers every summer for want of water. But the most magnificent specimen of an American ash, and that, too, of the finest variety of the species (viz. *F.* a. *j*uglandifòlia), is on the banks of the Thames, in front of Pope's Villa. It is there nearly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70 ft. high, with a head upwards of 60 ft. in diameter; and it retains its fine, deep green, glossy leaves till Christmas. At Stackpole Court, in Pembrokeshire, this variety ripens seeds, from which many young plants have been raised, and distributed in the woods. We have described and enumerated upwards of fifty species and varieties of ash in our *Arboretum*, plants of most of which may be had at Messrs. Loddiges's.

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*A*trapháxis and Tragopỳrum *Arb. Brit.* are low shrubs of very great beauty, though little known. Some species of both are figured in our *Arboretum;* and there are plants of one species of each genus in the Chelsea Botanic Garden. A beautiful plant of *A*trapháxis spinòsa is, also, in the peat-earth compartment of Messrs. Loddiges's arboretum. As the species of these two genera are but little propagated, we wish we could see the provincial horticultural societies offering premiums for the finest specimens.

*D*áphne. The autumn-flowering mezereon has often been recommended by us. It is now (Nov. 8.) in full bloom in our garden, and will continue in flower till March next.

Nýss*a* Arb. Brit. is a genus of which we have figured four sorts. All of these deserve culture; but none of them will do much good unless planted on moist ground, or near water. The largest tree in the neighbourhood of London is in the grounds of the Countess of Shaftesbury, near Richmond, where it has attained a greater size than that of the Duke of Wellington at Strathfieldsaye; being no less than 45 ft. high, with a trunk 16 in. in diameter at 1 ft. from the ground. There are hundreds of plants of this genus in some of the London nurseries; but, not having a showy flower (though the intense red, mixed with yellow and scarlet, of the leaves in autumn is more striking than any flower whatever), it is seldom asked for.

*U*lmus *Arb. Brit.* We pass over a number of genera, which deserve recommendation, to notice that useful tree, the elm. More attention seems to have been paid to this genus in the Canterbury Nursery, by Mr. Masters, the author of the *Hortus Duroverni*, than by any other cultivator that we are aware of; and the following sorts have been raised, and are now cultivated, by him: —

U. montàna rugòsa *Masters.* Bark reddish brown, cracking into short regular pieces, very like that of *A*cer campéstre. Tree of spreading growth, moderate size.

U. montàna màjor *Masters.* The tree is of upright and rapid growth, slightly branched; and, in some stages, approaching the habit of the common Scotch elm, but of a more tapering form. The leaves fall almost a month sooner than those of the following sort. [There is a fine tree of this kind of elm in the Horticultural Society's Garden, of which a portrait is given in the *Arboretum Britannicum.*]

U. montàna mìnor *Masters*, as compared with *U.* m. màjor, is of a more branching and spreading habit, of lower growth, with more twiggy shoots; and these are more densely clothed with leaves, which are long retained in the autumn.

U. montàna nàna *Hort. Dur.* Very like *U.* mìnor glàbra in habit and growth.

U. glàbra *Hort. Dur.* [*U.* montàna glâbra *Arb. Brit.*]

U. glàbra decúmbens *Hort. Dur.* [*U.* mont. péndula *Arb. Brit.*], or Umbrella Elm, is a very ornamental tree. When grafted on a lofty stem, it makes a good companion to the drooping ash.

U. glàbra replicàta *Hort. Dur.* [*U.* m. fastigiàta *Art. Brit.*] The leaves enfold one side of the stem. The whole habit is remarkable; for it forms a cup-shaped tree, that cannot be mistaken for any other. Its foliage is darker than that of any other elm, save that of *U.* c. vìrens. [This variety was raised at Exeter, by Mr. Ford, nurseryman there, about 1826; and is known by the names of Ford's Elm, *U.* m. Fórd*ii*, and *U.* exoniénsis, or the Exeter Elm.]

U. glàbra màjor *Hort. Dur.*, Canterbury seedling, is of more vigorous growth than the species; and, indeed, is a rival to *U.* americàna in quickness of growth. It preserves its foliage long after *U.* m. glàbra; and its bark is like that of *U.* americàna. This tree is also more spreading than that sort.

U. campéstris *Hort. Dur.* Very twiggy; pale smooth bark; irregular growth in some plants, with almost horizontal branches, where no others are near to force the shoots upwards. In some soils, it is very subject to decay at the joints. The bark leaden-coloured while young, splitting into long thin strips with age. A bad variety to cultivate for timber.

U. campéstris álba *Masters.* Of upright growth. The old bark cracks in irregular long pieces, and becomes very pale with age. A good timber kind. [Shoots with the bark tinged with red, and the footstalks of the leaves quite red. Leaves shining, and doubly and deeply serrated, bearing a very near resemblance to those of *U.* effùsa.]

U. campéstris acutifòlia *Masters.* Growth, during its early stages, very like the last, but stronger. The leaves, in old specimens, more tapering, and the branches more pendulous. The young leaves do not justify its name. Bark like the last. This

appears very common in some parts of Essex, Suffolk, and Norfolk. [The specimens sent us closely resemble those of the preceding sort.]

U. campéstris strícta *Hort. Dur.* Red English Elm. One of the most valuable timber trees of the small-leaved kinds. Growth very rigid. The timber is excellent; and the tree forms poles of equal diameter throughout. There are fine specimens of this tree in Minster, Thanet, and at Ickham, near Canterbury. In Mr. May's park at Herne, where there are several kinds of elms, all of which thrive remarkably well, one recently cut down showed this day (Nov. 14. 1836) indications of upwards of 100 years' growth. A portion of the trunk girts 15 ft. for 16 ft. in length. The remaining portion of the tree has been appropriated.

U. campéstris vìrens *Hort. Dur.*, or Kidbrook Elm, a Cornish variety, is almost evergreen in a mild winter; and, as such, is the most ornamental tree of the genus. It must not, however, be depended upon as a timber tree, because, in some autumns, the frost kills the shoots. The bark is red, and the tree of spreading habit. This, like the last-mentioned kind, grows well upon chalk. [There is a fine tree in the Horticultural Society's Garden, named there *U.* montàna nodòsa, which fully answers to the above description of Mr. Masters.]

U. campéstris viminàlis *Masters.* In some stages of its foliage, this sort is frequently mistaken for a variety of birch. It is quite useless as a timber tree; but makes an ornamental tree, with a character of its own. This was raised in 1817, by Mr. Masters. The stems are erect; and it does not appear likely to exceed 30 ft. in height. It produces an abundance of pendulous twigs; whence its name. [There is a fine tree of this variety in the Horticultural Society's Garden, which, in 1834, when we had a drawing taken of it, was 30 ft. high.]

U. campéstris péndula *Hort. Dur.* This variety was originated at Downton, where it is said to have grown into fine timber. With Mr. Masters it grows so irregular, that it does not appear likely to become of value as a timber tree. [We have written to Mr. Knight respecting this variety.]

U. suberòsa *Hort. Dur.* [*U.* campéstris suberòsa *Arb. Brit.*] The Dutch cork-barked Elm. This, except *U.* americàna and the Canterbury seedling (*U.* montàna màjor glàbra), is the quickest-growing of any that Mr. Masters cultivates. It is, moreover, valuable, on account of its growing well upon the Kentish chalks; and it keeps its leaf till late in the autumn. It is a tree of large growth: many of the elms at Windsor are of this kind.

U. suberòsa variegàta *Hort. Dur.* [*U.* c. s. variegàta *Arb. Brit.*] is precisely like the last, except in its variegation. Mr. Masters has seen a few of very large dimensions; and there is

one in the grounds of G. May, Esq., Strood House, Herne, remarkable for its size and beauty.

U. suberòsa álba *Masters.* [*U.* c. s. álba *Arb. Brit.*] A lower tree, of more compact growth, than the two preceding varieties; and often growing into an oval, or rather cone-shaped, head. Young shoots pubescent. Foliage thickly set. Bark much wrinkled, and becoming white with age. Fine specimens of this variety are growing in Lee Park, near Canterbury.

Several of the varieties of the above list are, we believe, wanting in the collections about London; and some of them seem of great value as timber and ornamental trees. We wish much that some gentleman near London, who could spare a sufficient quantity of land, would plant an ulmarium, and collect varieties from all parts of Europe. The kinds might then be determined with accuracy, and also the comparative value of the timber. If the business were properly set about, all the results of real utility might be attained in ten years after planting; for in that period all the sorts worth growing for their timber would be 50 ft. high, with trunks 1 ft. in diameter at the surface of the ground.

U. effùsa *Arb. Brit.* is a most remarkable tree, quite as easily known in winter as in summer. The finest specimen in England is at White Knights, where, in 1835, it was upwards of 60 ft. high. There are three trees of this elm in the Horticultural Society's Garden, and there are plants at Messrs. Loddiges's.

*A*lnus cordifòlia *Arb. Brit.* is a most beautiful tree, introduced in 1818, scarcely ever seen in plantations, though there is abundance of plants at Messrs. Loddiges's, and in the Woking Nursery.

*Q*uércus. All the species and varieties of oaks are beautiful. The oaks of Europe may all be reduced to three species: *Q. R*òbur, the British oak; *Q. C*érris, the French, Turkey, and Austrian oak; and *Q. I*`lex, the Spanish and Italian oak. To these may be added *Q. Æ*gilops and *Q. S*ùber, with two or three others. The American oaks may almost all be reduced to *Q.* álba, *Q.* rùbra, *Q. P*rìnus, and *Q.* vìrens. The finest trees of American oaks in England are at Strathfieldsaye. The only nursery which we know, which contains a large stock of *Q. R.* sessiliflòrum, is that of Young and Penny at Milford. The weeping oak at Moccas Court, and the curious cut-leaved oak of Mr. Fenessey, have been already noticed. One of the finest kind of weeping oaks in England is at Hackwood Park, in Hampshire, of which we have been kindly promised a drawing, which we shall have engraved for the *Arboretum.*

*P*ópulus. A new variety (*P.* nìgra *s*alicifòlia), with leaves not unlike those of *S*àlix viminàlis, has lately been introduced by

Messrs. Loddiges. *P.* cordifòlia *Lodd. Cat.*, edit. 1836, (*P.* heterophýlla *Arb. Brit.*) is a tree, which, though it has been a long time in the country, is little known. As it bears a profusion of catkins, and is therefore a valuable spring tree, we should like to see it much more frequently cultivated in ornamental plantations.

Salisbùr*ia* Arb. Brit. Almost all the trees in the country are supposed to be males; but there are female plants at Messrs. Loddiges's. Some curious facts respecting this tree will be found under our Foreign Notices, article France, Vol. XII., p. 690.

*P*ìnus *Arb. Brit.* *P*ìnus austrìaca *Höss's Anleitung*, p. 6., (*P.* nígricans of the Vienna nurserymen) bears a general resemblance to *P.* sylvéstris, of which, notwithstanding the difference in the cone, we have no doubt it is only a variety. This sort of pine has many valuable properties. It is described at length in Lawson's *Agriculturist's Manual*, p. 338.; and there are abundance of plants in Lawson's Nursery. It is considered more hardy than the Scotch pine.

A. nóbilis is a very scarce variety, of which there is a plant at Chatsworth; but we hardly know of another bearing this name that is true to the description, except some plants in the Fulham Nursery, which are 3 guineas each. There are plants of nearly forty sorts of the genus *P*ìnus (including *A*bies, *C*èdrus, &c.) at this moment in the Fulham Nursery, varying in price from 1*s.* 6*d.* to 5*l.* each. *P*ìnus insígnis is 5*l.* *A*bies spectábilis (*P*ìnus Webb*iàna* Wall.), the giant silver fir of the Himalayan Mountains, is 2 guineas. *A*bies *Morìnda*, or, more properly, *A.* Smith*ii*, of which there are some hundred plants in Knight's Exotic Nursery, is 21*s.*: but we refer to Messrs. Whitley and Osborn's *Catalogue* for 1836.

We might have here noticed many other trees and shrubs, as either new, or old and neglected; but these may suffice for the present. We would respectfully suggest to the provincial horticultural societies the idea of offering premiums for the establishment, in the grounds of private gentlemen, of small arboretums. A certain prize might be given for a minimum number of trees and shrubs (say 100 species or varieties), which have been introduced during the present century; and for every 10 above this number, a certain addition might be made to the prize. The competitors might be required to present the society with a single leaf of each species, properly dried, attached to paper with a thread, and correctly named. Any species or variety that could not be correctly known by the leaf alone (of which, with the exception of double-flowering plants, there are very few indeed in the whole compass of the *Arboretum et Fruticetum Britannicum*) might safely be left out of view. Varieties

of roses, azaleas, and such like florists' shrubs, should, of course, be excluded from the competition.

Another, and perhaps a better, mode of encouraging the introduction of trees and shrubs into the grounds of gentlemen throughout the country would be, for the societies to offer premiums for the greatest number of species and varieties of some particular genus, for which the climate and soil of the locality were considered particularly adapted. Our *Arboretum Britannicum*, we think, would form a very suitable prize. For example, premiums for *Pópulus*, *Sàlix*, *Nýssa*, &c., might be held out for the fen lands; coniferous genera, for mountainous districts, and dry, sandy, or gravelly soils; elms, for chalks; oaks, for loams; Nepal genera, for ornamental purposes, or acclimatising in Devonshire, &c.

We would also repeat our suggestion made in a former Volume, that it would be most desirable, if gentlemen in different parts of the country, and more especially in the climate of London, would undertake to collect and cultivate each a single genus; and let the species and the varieties be examined by the botanical world, on certain days throughout the year.

Another most desirable object would be, the establishment of an arboricultural society, with 300 or 400 acres of land, in the climate of London; and we are persuaded that all that is wanting to form such a society is, an exceedingly active-minded man, enthusiastically fond of trees and shrubs, who is either independent, or has little else to do.

ART. IV. *Olitorial Notices; or, Notices of new Culinary Vegetables deserving of general Cultivation in British Gardens.*

(*Continued from* Vol. XII. p. 643.)

THE Spinach Tribe. — By far the best variety of the spinach tribe is the new Flanders, the leaves of which are almost as large as those of the white beet. The quinoa, Mr. Charlwood considers to be inferior, as a spinach plant, to either the New Zealand spinach or the French spinach.

The Onion Tribe. — A new variety of shallot, or, perhaps, a distinct species of *Allium*, has been cultivated for a few years in some private gardens. It is very much like an underground onion; but it separates into cloves, like garlic, or the common shallot, which are thicker and shorter than those of the shallot, but have the same flavour. In some parts of the country, this is called the Italian shallot; and in others the Cape shallot.

Asparaginous Plants, Salads, &c. — The giant asparagus continues to be in demand; and the new hardy white Cos is considered as decidedly the best Cos lettuce, and as being not only

more hardy than the old white Cos, but also than the brown Cos. The royal, or union, continues to be the best cabbage lettuce in cultivation. The taste of the mass of the public in London for winter salads is at a low ebb, otherwise we should long since have had blanched chicory grown in cellars in the manner recommended in the early volumes of this Magazine, and by Dr. Lippold in the present Volume. The Italian and the Manchester celery continue to be reckoned the best.

Pot and Sweet Herbs. — The most valuable of these, next to parsley, is, doubtless, tarragon; which, a young gardener, who has recently gone to fill a situation in Scotland, informs us, is as rare in the kitchen-gardens there as if it were a tender exotic. Under this head, we would remind gardeners of the excellent mode of preserving dried herbs adopted by Mr. Lindsay, and recommended in our Tenth Volume; viz. that of pressing them in a mould, and afterwards wrapping them up in paper, and laying them by in a dry place, not exposed either to a high temperature, or to currents of air.

Stalks and Fruits for Tarts, Pickling, &c. — The tart rhubarbs have lately gained a valuable addition in the *R*hèum austràle, which is much later than any of the other species in vegetating in spring, but which continues to grow vigorously in autumn, till it is destroyed by frost. It is true, the common sorts, by depriving them of their leaves in moderation during summer, and supplying them abundantly with water in July and August, will continue growing till winter; but the stalks of the leaves so produced have far less flavour than those of *R.* austràle. The flavour of the stalks of this species is said to resemble that of apples. According to some, the stalks are rather more purgative than those of any of the other sorts, even the *R.* palmàtum; and, as the roots are ascertained to form a portion, at least, of the rhubarb of commerce, this may be, to a certain extent, the case. From the experience of those who have used it for two or three years, however, we conclude that it is not injuriously so. Perhaps, for some constitutions, it might be advisable, in tarts made of the stalks of the common sorts, to introduce a small proportion of the stalks of *R*hèum austràle. This sort, we are informed in a communication which will appear in a succeeding Number, may, by protection with a frame and litter, be kept growing, or, at least, in a healthy green state, till the middle of January; about which time the earliest variety of common tart rhubarb, if set to rest by withholding water early in summer, and treated in a particular manner in autumn, will be fit to succeed it, without the application of artificial heat. In this way, tart rhubarb may be obtained all the year round, without forcing; at least, according to the common application of that word.

ART. V. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

Birmingham Botanic Garden; in monthly numbers, 4to, 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

The Floricultural Magazine and Miscellany of Gardening, edited by Robert Marnock, Curator of the Botanical and Horticultural Gardens, Sheffield. In monthly numbers, 6*d.* each.

Berberàceæ.

390. *EPIME'DIUM* [1906.
*macránthum *Lindl.* large-flowered ♃ △ pr 1? ap Li and P Japan 1835 D s.l Bot. reg.

A very pretty sweet-scented species, "remarkable for the large size of its pale violet flowers." It is, no doubt, quite hardy, and well deserving of cultivation. Plants are in the Fulham Nursery. (*Bot. Reg.*, Nov.)

Cruciferæ, or Brassicàceæ.

1853. *IBE'RIS*
*16365*a* coronària *D. Don* crown-*flowering* ○ or ♆ jn W ... 1836 S co Sw. fl.-gard. 2. s. 359.

A hardy annual, of easy culture, and by far the most showy of the genus. "Few plants have better claims to a place in the flower-border. Its flowers are large; and, at a distance, the plant bears a considerable resemblance to the double white rocket." (*Sweet's Fl.-Gard.*, Nov.)

1338. *VESICA'RIA*
*grácilis *Hook.* slender-*stemmed* ○ or ♃ my.au Y Texas 1834 S co Bot. mag. 3533.

A native of the same country as *V.* grandiflòra, noticed in p. 73., viz. Texas; and discovered at the same time by Mr. Drummond. "It is less showy than the latter, but a lively and graceful

plant, and well adapted for ornamenting rockwork. It continues in flower during almost the whole summer; and the blossoms are succeeded by the numerous, small, and exactly globose seed-vessels." (*Bot. Mag.*, Nov.)

Caryophyllàceæ.

1415*a*. AGROSTE'MMA
*suécica *Maund* Swedish ♐ △ pr ½ jn.s Pk Sweden 1824 D co Bot. gard. 144.

" A pretty plant for a select spot, with other favourites," which should be grown in peat. (*Maund's Bot. Gard.*, Dec.)

Rhamnàceæ.

668. *C*EANO'THUS
*collìna *Doug.* hill ♐ △ or 1 mr.s L N. America 1827 C p.l Bir. bot. gard. 13.

" This is a low decumbent shrub, its trunk scarcely rising 1 ft. from the ground; yet, being an evergreen, and perfectly hardy, it is a plant well worthy of notice, and will make an interesting addition to the shrubbery." It flowers freely; sometimes twice during one summer. (*Birm. Bot. Gard.*, Dec.) See *Arb. Brit.*, p. 125.

Fabàceæ, or Leguminòsæ.

1963. *G*ENI'STA 17497 monospérma.

" One of the most deliciously fragrant shrubs in the world. It is difficult to imagine anything more delicate and grateful than the sweet odour that its tender snow-white blossoms diffuse in the conservatory, in the months of May and June. It is described as being, when wild, a good deal taller than a man, having a trunk 1 in. thick, and waving its green-grey, leafless, thread-like branches in the wind in the most graceful manner. All along the basin of the Mediterranean, as high as the latitude of Sicily, it is abundant; but it cannot bear the cold of the French shore. At Gibraltar, in a hardy barren soil, and close upon the sea-beaten rocks, it is loaded with blossoms in February; along the Barbary coast, in Sicily from Alicata to Spaccaforno, and in Greece, it occurs in similar situations; and, finally, it gains its eastern limits in the deserts of Mount Sinai, where the Arabs call it *retam*." (*Bot. Reg.*, Dec.)

Rosàceæ § Pòmeæ.

1506. *C*RATÆ'GUS 12933 mexicàna *Dec. Prod.*, 2. p. 629.; *Sweet's Fl.-Gard.*, 2, ser., t. 300.; *Loudon's Arb. Brit.*, p. 843., and fig. 617. p. 867.

Spec. Char. — Leaves oval, acute, serrated; in some instances, cut at the tip; tomentose on the under surface. Flowers in corymbs. Lobes of the calyx acute, tomentose. Bracteas slender, scale-like. Fruit spherical, containing 3—5 stones.

A small tree, which, in mild climates, is quite evergreen; with harsh rather shining leaves, which, in the more vigorous shoots, are sometimes 3-lobed. Stipules linear-lanceolate, scaly, having glands on their margins, longer than the petioles. Fruit yellow, palatable. (*Bot. Reg.*, 1910.)

" The flowers are almost as large as those of some kinds of pear; and, appearing as they do in abundance from the rich green

bosom of the leaves, produce a striking effect. The fruit is in some" esteem "among the Mexicans; but it has not much merit." (*Bot. Reg.*, Nov.)

1506. CRATÆ'GUS 12907 glandulòsa *Dec. Prod.*, 2. p. 627.; *Arb. Brit.*, p. 817. fig. 567.
2 macrántha *Lindl.*
Synonyme: C. macrántha *Lodd. Cat.*; *Arb. Brit.*, p. 819. figs. 572, 573.

Spec. Char. — Leaves roundish or oblong, incisely serrate, wedge-shaped at the base, on long petioles. Sepals pinnatifid, glanded. Spines axillary, bent, longer than the petioles. Fruit spherical, corymbose, 3-stoned. Stones having a thick bony shell. (*Lindl.*) Var. 2 macrántha has the spines equal to, or longer than, the leaves. Fruit smaller. (*Lindl.*)

"A fine, handsome, vigorous American thorn, forming a tree with a spreading head, and having firm dark green leaves, amongst which are intermixed stout curved spines of unusual length. I have seen them as much as 4½ in. long. It flowers in May, and produces an abundance of its deep vermilion-red haws in the autumn. No writer upon the wild trees of America notices this remarkable plant; it is therefore, in all probability, of garden origin: indeed, I entertain no doubt of its being a mere variety of *C.* glandulòsa, possibly of hybrid extraction between that species and *C.* Crús-gálli." (*Bot. Reg.*, Dec.)

Compósitæ § Corymbíferæ, or Asteràceæ.

3401. CRASPE'DIA (see in Vol. XI. p. 375.) [Bot. reg. 1908.
*glaúca *Lindl.* glaucous-*herbaged* ♃ △ cu. ?1½ ... ap Y N. Holland 1836 S ... ?s?l.
Synonyme: Richea glaúca *Lab.*

"A curious herbaceous plant, found in Van Diemen's Land, whence it was sent by Mr. James Backhouse to his brother, in whose nursery at York it flowered in April last. It will, no doubt, be hardy in the warmer parts of Great Britain, but had better be kept in a frame in other places." (*Bot. Reg.*, Nov.) Dr. Lindley has not taken any notice of C. macrocéphala *Hooker*, described and illustrated in the *Botanical Magazine*, t. 3415.; and noticed in some detail in our Vol. XI. p. 375. A third kind, according to the names, is registered in our *Hortus Britannicus.*

2411*a*. *RATABI'DA* Raf. (meaning unknown) 21968 columnàris. [gard. 2. s. 361.
*2 pulchérrima *D. Don* most beautiful ♃ △ or 3 au R.Y N. America ?1835 D co Swt. fl.-
Synonymes: Rudbéck*ia* columnàris *Pursh;* R. columnífera *Fras. Cat.;* R. Tagè*tes* James It.; Obeliscària columnàris *Dec. Prod.;* Obeliscària pulchérrima *Dec.*

Professor Don has adopted "*Ratabìda* as a separate genus, from its achenia being furnished at their inner angle with a membranous fringed border; and from the pappus being present in the form of a very short membranous ciliated crown." (*Sweet's Fl. Gard.*, Dec.) A very showy hardy perennial, frequent on the banks of rivers throughout the western regions of North America. The rays of the flower are of a velvety brown, bordered with yellow. There are plants in the Bristol Nursery.

Campanulàceæ.

607. CAMPA'NULA
*Barrelièri Marnock Barrelier's ♃ △ or 1 s B ... ... R co Flor. mag. 1. t. 12.

"This is a graceful little plant, rising to about the height of

9 in. or 10 in. The stem is slender; and, unless supported, it is inclined to trail. It is covered throughout with whitish lines. The leaves are alternate, solitary; the radical ones heart-shaped, entire, on longish slender footstalks. Those on the stem are entire, mostly ovate and obtuse, with strongish footstalks, about their own length. The flowers are produced from the axils of the leaves on a pendulous leafy stalk, or in clusters of three or four flowers at the extremity of the stem. The calyx is parted into five deep segments; the corolla is also parted into five recurved segments. It can be kept with certainty in a cold frame during winter. It is one of the handsomest plants that we have seen for a long time. It will propagate by division at the root, by seeds, cuttings, &c." (*Flor. Mag.*, Dec.)

Lobeliàceæ.

3390. CLINTO'NIA
*pulchélla *Lindl.* pretty ⓞ el ½ jy.au B W Y Colombia ? 1831 S co Bot. reg. 1909.

Dr. Lindley figures "this little plant more for the sake of recording its existence, than from any expectation that it will ever become an object of horticultural interest; for, since C. élegans, a far hardier and more cultivable plant, has disappeared, there can be little hope that this, beautiful as it is, will be preserved. It only exists, at present, in the garden of the London Horticultural Society, whither it was sent from California by Mr. Douglas. It is there treated as a tender annual; and every year a small number of tiny plants have been raised from the very few seeds ripened the previous year. It has been usually grown in a flower-pot." (*Bot. Reg.*, Nov.)

Hydrophyllàceæ.

3292. EU'TOCA
*Wrangeliàna Fisch. Wrangel's ○ el 1 au B California 1835 S s.l Swt. fl.-gard. 2. s. 362.

"A hardy annual, with procumbent stems, and large pale blue flowers; a native of the Russian colony of Ross in New California, on the north-west coast of the American Continent; whence it was introduced by seeds to the Imperial Botanic Garden at St. Petersburg last year." It flowered for the first time "in Mr. Lambert's collection at Boyton House, Wilts, where the plant had been raised from seeds communicated by Dr. Fischer." (*Sweet's Fl.-Gard.*, Dec.)

Scrophulariàceæ.

1717. PENTSTE'MON *W.* [reg. 1899.
*heterophýllus *Lindl.* various-leaved £ △ or 1½ to 2 jn.o R California 183- C co Bot.

A hardy herbaceous plant, propagated by cuttings, as well as seeds. The stems are somewhat woody and recumbent, and they throw out a number of lateral shoots. "The upper part of the plant is sometimes furnished with leaves so narrow as to be almost linear; the lower has them of an oblong lanceolate form; so that a person, unaware of the circumstance, would be apt to mistake portions of the same individual for different species."

This is one of the numerous and valuable introductions of Douglas. (*Bot. Reg.*, Oct.)

65. CALCEOLA'RIA
*punctàta *Knowles and Westcott* is a hybrid between C. pardanthèra [?pardántha] and a white unnamed variety, both of which are also hybrids.

A truly elegant kind of Calceolària, raised by John Willmore, Esq., of Oldford, near Birmingham. (*Birm. Bot. Mag.*, Nov.) It evidently belongs to C. corymbòsa; and that specific name, we think, ought to have been introduced, as well as punctàta; though we cannot help regretting that such ephemeral productions should be figured in works strictly botanical at all. According to the figure, the corolla has its ground colour of an extremely pale yellow, and is tinted and spotted with lilac: its characters of colour are not described in the text.

Labiàceæ.

74. MONA'RD*A* L. [1836 R p.1 Bot. mag. t. 3526.
* aristàta *Nutt.* awned (floral leaves and outer bracteas) ♃ △ pr 2 jl.au Pa Ro N. America.

A native of the Arkansas, "perennial and annual," with stems 1 ft. or more long; quite hardy, and constituting a desirable acquisition to our borders. (*Bot. Mag.*, Oct.)

1674. *PHLO'MIS*
*armeniaca *Willd.* Armenian ♀ △ cu 1 jn Y Armenia 1834 D p.1 Swt. fl.-gard. 2. s. 364.

"The plant is apparently quite hardy, is well adapted to ornament rockwork, and may be increased with facility by slips, as it sends forth a number of short leaf shoots from the root. We have observed no tendency in the plant to become shrubby, as recorded by Mr. Bentham in his elaborate monograph of the Labiàtæ." (*Sweet's Fl.-Gard.*, Dec.)

Verbenàceæ.

1752. CLERODE'NDRUM 15681 squamàtum *Vahl.*
Synonyme: speciosíssimum *Paxton*, Paxton's Mag. of bot. 3. p. 217.

A branching shrub, growing to the height of 4 ft., with an erect stem, and cordate pointed leaves, and flowers produced in large spreading terminal panicles, of a vivid scarlet colour, and each averaging 2 in. in length, tubular below, with a 5-parted spreading limb. The native country of this plant is not stated; but it is, probably, Japan. Messrs. Lucomb and Pince of the Exeter Nursery received the plant from Belgium in 1835; and it flowered profusely in this nursery in Aug. and Sept. 1836; and at Chatsworth, in Oct. of the same year. Mr. Paxton describes it as one of the finest plants which he has had the good fortune to figure; and as far superior in beauty to any of the family to which it belongs. "It is beyond the reach of the artist to give a faithful likeness of its colours. Being a plant of easy culture, no collection, however small, ought to be without it." Messrs. Lucomb, Pince, and Co. have a very fine plant "in the open border. The plant in the house we have treated with a temperature of from 65° to 75°, with a plentiful supply of water: it has

grown amazingly, and is now a fine plant, 4 ft. high, covered with beautiful luxuriant foliage; and each shoot terminated by large spreading panicles of rich scarlet flowers, each flower 2 in. long; and the whole plant having open, all at once, several hundred blossoms. It has now been in this splendid state for more than six weeks, and promises to continue quite as long again. It thrives in equal parts of heath mould, loam, and vegetable soil; and delights in being frequently washed with the syringe." (*Pax. Mag. of Bot.*, Nov.) We are informed by Mr. Main, Mr. Geo. Don, and others, that this is nothing more than the Clerodéndron squamàtum *Vahl*, Hort. Brit., No. 15681., Bot. Reg., t. 649.; which was introduced in 1790, and flowered in Colville's Nursery in 1822. On comparing the figure in the *Botanical Register* with Mr. Paxton's figure, we have no doubt whatever of the identity of the plants.

1749. *V*ERBE'NA 15642 Lambérti
*2 rósea *D. Don.* rose-*flowered* ♃ △ or 1½ jl Pk Carolina ... D co Swt. fl.-gard. 2. s. 363.
Synonyme: V. Drummóndii Hort.

"The *V.* Lambérti was originally imported by the late Mr. Lyon, by whom it was gathered in Carolina. The present very pretty variety was collected in Texas by the late Mr. Drummond, and is cultivated in gardens, as a distinct species, under the name of *V.* Drummóndii; but we have looked in vain for characters to separate it from Lambérti; and we must confess that the line of distinction even between this last and Aublètia is not easily drawn." (*Sweet's Fl.-Gard.*, Dec.)

*28421*a* Tweedieàna Hook. Tweedie's £ ⧋ el ... s S Brazil ? 1834 C p.l Bot. mag. 3541.

"Dried specimens of this most lovely plant were sent, by the kindness of Mr. Niven, the able and zealous curator of the Glasnevin Botanic Garden, under the name here adopted." "It will be seen at once that the species has much affinity with *V. c*hamædrifòlia *B. M.* (*V. Melíndres* Gill., in *Bot. Reg.*), *Hort. Brit.*, No. 28421.; but it is a tall upright-growing plant, clothed with soft downy hairs; of a much more delicate texture, especially in the leaves, which are considerably larger, more acuminate and serrated, more cuneate at the base, and decidedly petioled. The flowers are larger, and more inclining to rose colour ('rich rosy crimson'), in greater number, and the raceme more capitate. Hitherto it has only been treated as a stove plant; but it will, in all probability, be found to bear the open air as well as *V. c*hamædrifòlia." (*Bot. Mag.*, Dec.)

*Begoni*àceæ.

2654. BEGO'NI*A*
*Fischer*i* Otto Fischer's ♃ □ or 1½ f.mr W ... 1835 C l.p Bot. mag. 3532.

This plant was introduced into the Edinburgh Botanic Garden from Berlin. It has small flowers, but foliage exquisitely beautiful in its colouring, this being as follows: — The leaves, when young, are bright red behind, paler at the veins, and pink above,

with a peculiar silvery lustre, which continues on the old leaves; the colour being then beautifully delicate yellowish green, and the redness behind much less considerable. The disk of the leaf is in figure broadly lanceolate, with a heart-shaped base; the lobes there unequal: it is a little waved, and is toothed. (*Bot. Mag.*, Nov.)

Proteàceæ.

303. ISOPO'GON Báxter*i* R. Br., noticed Vol. XII. p. 74., is figured in Bot. Mag. t. 3539.

Aristolochiàceæ.

2582. *A*RISTOLO'CHIA *L.*
*trifida *Lam.* trifid-*leaved* ♃ ▭ cu ?15 ... G sh Y B R Caracas ... C p.l Botanist *S.*

This stove climber is stated to have been lately introduced. The drawing was taken from a plant growing luxuriantly in the hot-house at Weston, Shropshire, the seat of the Earl of Bradford. (*The Botanist*, No. I., Oct.) Whether this species is ligneous or herbaceous, what month it flowers in, to what height it grows, or in what year it was introduced, are not mentioned.

Euphorbiàceæ.

1460. *E*UPHO'RBI*A* L.
*28261*a* Bòjer*i* Hook. Bojer's ❀ ▭ spl. 4 nov. to f S. Madagascar ... C p.l Bot. mag. 3527.

"A most beautiful plant, and better meriting the name of splèndens than its near ally so called. . . . It seems to be a plant of humbler growth than the *E.* splèndens: it has fewer spines, more coriaceous, more obovate and retuse leaves, richer-coloured bracteas, and simple filaments. It flowers in the stove of the Glasgow Botanic Garden, in the latter end of winter, and in early spring; and more or less through the greater part of the year." (*Bot. Mag.*, Oct.)

Thymelàceæ.

87. PIMELE'A
*805*a* nívea *Labill.* white-*herbaged* ❀ ▭ pr 6 ... W N. Holl. ?1833 C s.p Birm. bot. gard. 9.

A shrub, growing to the height of 6 ft. or upwards in its native country. It seems nearly allied to P. incàna, but differs from it in the disposition of its leaves, which, in incàna, are described as not imbricate, which they are in this plant. Raised from seeds, in 1834, and probably the only plant of this species [? variety] which has ever been seen in a living state in this country. The specific name is applied in relation to "the peculiarly white appearance of the tomentose branches, and under surface of the leaves." (*Birm. Bot. Gard.*, Nov.)

Stackhousiàceæ.

898. STACKHOU'SI*A* [reg. 1917.
*monógyna *Lab.* one-styled ♀ △ pr 1 ap Pk L Van Diemen's Land 1835 C co Bot.

"A pretty, neat, herbaceous plant, a native of Van Diemen's Land, whence its seeds were sent by Mr. James Backhouse to his brothers at York, where it flowered for the first time in April of the present year. It is interesting, as forming the type of a very small natural order bearing its own name, concerning

which the reader is referred to the *Natural System of Botany*, p. 118. ed. 2." (*Bot. Reg.*, Dec.)

Orchidàceæ.

2530*a*. MYA'NTHUS *Lindl.* [p.r.w Bot. reg. 1896.
*deltöides *Lindl.* triangular-*lipped* £ ⍓ cu 1½ o D G spotted with P Demerara 1835 D

The fourth species of a very curious genus. "It is a native of trees in the neighbourhood of the great waterfall of the Demerara river," and it flowered in the collection of Richard Harrison, Esq., of Aighburgh, in Oct. 1835. (*Bot. Reg.*, Oct.)

2554. EPIDE'NDRUM.
*2730*a* æ'mulum *Lindl.* emulous £ ⍓ or ¾ f Li Para 1834 D s.p Bot. reg. 1898.

A very rare little plant, closely allied to the variable E. frà-grans. (*Bot. Reg.*, Oct.) Its flowers are very like those of that species, but of only one third the size.

* SCAPHYGLO'TTIS *Pöp.* BOATLIP. (*Skaphē*, a boat, and *glōtta*, a tongue; in allusion to the usual form of the labellum.) 20. 1. sp. several. [reg. t. 1901.
* *violàcea *Lindl.* violet-*coloured-flowered* £ ⍓ cu ½ f R V Demerara ... D p.r.w Bot.

Not a species of any beauty; but a great botanical rarity. (*Bot. Reg.*, Oct.)

*ASPA'SIA *Lindl.* (From *aspazomai*, I embrace; in allusion to the manner in which the column is embraced by the labellum.) [O p.r.w Bot. reg. 1907.
*variegàta *Lindl.* variegated-*flowered* £ ⍓ fra ¾ f G spotted with Y and R S. Amer. 1836

The flowers are deliciously sweet; and the plant will probably prove of easy cultivation, and fit for introduction into every collection. In most respects, it resembles A. epidendröides. (*Bot. Reg.*, Nov.)

[D p.r.w Birm. bot. gard. 8.
*epidendröides *Lindl.* Epidendrum-like £ ⍓ cu 1 ... W Y marked with brown Panama 1833

An elegant plant, with the aspect of an Epidéndrum; and, although not brilliant in colour, it is beautiful both in the shape and markings of its flowers. The following observations on the singular habit and appearance of orchidaceous plants are interesting, as such; and they show the superior description of matter with which the spare room (that is, the space that remains after the description and all necessary characters are given) in the printed pages of this work is filled up.

The structure of the flowers of the Orchidàceæ "is curious, as presenting a remarkable deviation from what is usual in this part of plants; and important, as affording the most convenient means for their classification. Orchidaceous plants have not a certain number of stamens disposed around one or more pistils, like other flowering plants; but are furnished, instead of them, with a central fleshy body, called the column, round which the sepals and petals are arranged. This fleshy body (which varies greatly in length in different genera) is considered to consist of three stamens and a style in a state of firm cohesion. The stigma, instead of forming the extremity of the style, as in other flowers, is a moist cavity, situated in the front of the column, immediately below the summit. At the apex of the column is placed a solitary anther, the lateral stamens being abortive, or

imperfectly developed. A curious deviation from this arrangement of parts occurs in Cypripèdium, which has the lateral stamens perfect, and the central one abortive. In a few of the genera, the anther is persistent; but in by far the greater number it is deciduous. On removing the anther, we discover the pollen masses, which are subject to various modifications of structure. They have accordingly been divided by Dr. Lindley (whose intimate acquaintance with these extraordinary plants is well known) into several distinct tribes, in a work devoted expressly to their description." (*The Genera and Species of Orchidaceous Plants.* By J. Lindley, Ph. D., F.R.S., and G., &c.)

2553. EPIDE'NDRUM [3534.
*macrochìlum *Hook* large-lipped ⚷ ▱ el ¾ jn G.Y.R Mexico 1836 D p.r.w Bot. mag.

A charming epiphyte, introduced by Charles Horsfall, Esq., in whose fine collection at Evesham it flowered in June, 1836. In the general structure of the flower, it resembles Encýclia pàtens (Epidéndrum odoratíssimum). (*Bot. Mag.*, Nov.)

2540. ONCI'DIUM [Bot. reg. 1911.
*îridifòlium *Lindl.* Iris-leaved, *or pygmy* ⚷ ▱ cu ¼ au Y Mexico and Brazil 1835 D p.r.w

" This curious little species of Oncídium seems to be common in many of the hotter parts of America. In the neighbourhood of the town of Bom Jesus de Bananal, in the province of St. Paul, it grows exclusively on the branches of orange and lemon trees. It was very abundant there, and constantly preferred dry places exposed to the sun." This is figured from the Earl Fitzwilliam's collection at Wentworth House, Yorkshire. It is, from the figure, a charming species, compact in its mode of growth, and showy in its flowers, which are large for the size of the plant. (*Bot. Reg.*, Nov.)

2567. IONO'PSIS
*ténera *Lindl.* delicate-*habited* ⚷ ▱ pr 1 my W. Pk Cuba 1835 D p.r.w Bot. reg. 1904.

" The species of this genus are but little known. It is seldom that they appear in gardens, in consequence of the difficulty attending their preservation on shipboard; and, when imported, they are difficult to manage, and soon are lost. In their native woods, they grow upon the smaller branches of trees, or upon dead sticks, which their white, slender, delicate roots quickly overspread. When cultivated, they require all the aid of a hot and damp stove." This elegant little plant flowered, in May last, in Sir Charles Lemon's collection at Carclew, to which it was presented by Captain Sutton of Flushing, near Falmouth, who brought it from Havannah in March, 1835. The scape bears a number (eleven are shown in the figure) of flowers, arranged alternately in a loose sort of panicle. It seems that the colour is pale pinkish, marked with violet-coloured veins. (*Bot. Reg.*, Nov.)

2552. BROUGHTO'N*IA* 22725 sanguínea *R. Br.*
Synonyme: Broughtònia coccínea *Hook.*, Bot. mag. 3536.; Dendròbium sanguíneum *Swt. Fl.-Gard. Oct.*; Epidéndrum sanguíneum *Swt. Prod.*

Orchidàceæ §*Neottièæ.*

2574. PRESCO'TT*IA*
*colòrans *Lindl.* colouring £ ⧄ cu ja 1½ G.W Brazil 1834 D p.l Bot. reg. 1916.

"It is a much more attractive plant than the other variety (figured in *Bot. Reg.*, t. 1067.), because of the deep purple spots at the base of the divisions of its flower; and it might be almost considered a different species, but there do not appear to be any characters to distinguish it with certainty. It will probably be treated as a green-house plant; but it is, undoubtedly, one of those species which would succeed better in a situation protected from frost and damp in winter, but without any artificial heat. Considering how very large a number of beautiful plants we have that would grow in all their native beauty under such circumstances, it is not a little remarkable that none of the many wealthy cultivators of flowers should yet have thought of constructing movable glass houses, that should be only erected during winter, and totally removed after the frosts in spring. A thousand pounds so expended would produce a far greater result than three thousand applied in the common manner; and the annual cost of keeping such houses in order would be nothing as compared with the expense of green-houses and stoves." (*Bot. Reg.*, Dec.) We are glad to see Dr. Lindley taking up the subject of temporary green-houses, which we have been strongly recommending for the last twenty years. See our *Remarks on Hot-houses* (4to, 1816), *Encyc. of Gard.*, this Magazine, and *Arb. Brit.*

Orchidàceæ § *Epidéndreæ.*

2562. BRASSAVO'L*A* [1914.
*28680*a* cordàta *Lindl.* heart-*lipped* £ ⧄ cu 1 ja G.W Brazil ... D stones and rocks Bot. reg.

"Closely allied to B. nodòsa, from which it differs in its flowers being only half the size, with a cordate labellum, and a very different clinandrium. It was imported from Brazil by Messrs. Loddiges. . . . There will be no certainty in the cultivation of epiphytal Orchidàceæ, till we become more precisely acquainted with the habits of the different species than we now are. At present, it is usual to consider them all natives of trees in damp shady woods. It is, however, quite certain that such is the habit of only some of them. The whole genus Brassavòl*a*, for example, grows upon stones and rocks, never upon trees, in open forest glades, fully exposed to the sun." (*Bot. Reg.*, Dec.)

2553. CATTLE'Y*A* 28532 intermèdia
2 pállida *Lindl.* pale-*flowered* £ ⧄ or 1 jn R.L Brazil 1833 D p.r.w Bot. reg. 1919.

"The mixture of white and crimson in its flowers gives it a beautiful appearance, and renders it much more interesting than the original variety, which is too like C. Loddigès*ii*." It is by far the handsomest of the tribe in this country [Buenos Ayres], and grows equally well on the sea-beaten rock and the moss-covered tree in the heart of the forest. It is to be found in

bloom at all seasons. There are many varieties of it; their colour, pink and crimson." (*Bot. Reg.*, Dec.)

Iridàceæ.

145. *SISYRI'NCHUM* 28017 *graminifòlium*
*2 *pùmilum Lindl.* dwarf £ ☐ or ½ o Y Chili ... D s.p Bot. reg. 1915.

"It is a stove herbaceous plant, growing readily in sandy peat, flowering in its season, and then dying down for the remainder of the year." (*Bot. Reg.*, Dec.)

Amaryllidàceæ.

969. AMARY'LLIS 7993 psittacìna [3528.
*2 *hýbrida Hook.* hybrid ☿ ☐ spl 1½ ap R G English hybrid ... 1820 O r.m Bot. mag.
Synonymes: Amarýllis psittacìna Jóhnsoni Gowan in *Hort. Soc. Trans.*, 5. p. 361.; A. Griffíni Sweet's Hort. Brit., p. 509.

A "truly splendid hybrid, the offspring, it is reported, of A. Jóhnsoni (itself a hybrid), fertilised by the pollen of A. psittacìna." It was raised at South Lambeth, by W. Griffin, Esq., previously to the year 1820. (*Bot. Mag.*, Nov.)

Liliàceæ § *Scílleæ.*

*1046*a*. NECTAROSCO'RDUM *Lindl.* HONEY GARLIC. (From *nektar*, honey, and *skorodon*, garlic; in allusion to the honey pores in its flowers.)
sículum *Ucria* Sicilian ☿ △ or 3½ jn G.P.W Sicily 1832 O co Bot. reg. 1913.
Synonymes: A'llium sículum Ucria Pl. ad Lin. Op. Addend., n. 7.; *Guss. Prod. Fl. Sic.*, 1. p. 398.; *Don* in *Swt. Fl.-Gard.*, 2. s., t. 349.; *Gard. Mag.*, vol. xii. p. 543.

"A bulbous plant, found wild in shady woods on the mountains of Sicily. It has been hitherto referred, most unaccountably, to the genus *A'llium*, with which it agrees, indeed, in having an umbellate inflorescence, and a powerful garlic-like odour; but, in hardly any other respect, more than *Ornithógalum*, and the other genera of the liliaceous order. The characters assigned to it are amply sufficient to fix it as a most distinct and remarkable genus." (*Bot. Reg.*, Dec.)

ART. VI. *List of Fifty-four Sorts of Wheat, Seeds and Ears of which have been received from M. Vilmorin.*

THE sorts marked *M. R.* are those mentioned in *La Nouvelle Maison Rustique*. The numbers correspond with those in the general collection of wheats of M. Vilmorin.

Paris, Sept. 1836.

I. *TRI'TICUM SATI'VUM.* Froment ordinaire.

A. *Variétés sans Barbes.* (*Beardless Varieties.*)

M. R. 1. Blé blanc de Flandres.
M. R. 2. Blé de Talavéra.
M. R. 3. Blé de Hongrie.
M. R. 7. Blé Fellemberg.
M. R. 8. Blé Pictet.
M. R. 5. Richelle blanche de Naples.
M. R. 6. Touzelle blanche de Nice.
M. R. 9. Blé d'hiver ordinaire des environs de Paris. (Froment commun d'hiver à épi jaunâtre. *M. R.*)
M. R. 14. Blé de Mars sans barbes ordinaire.
17. Blé de Saumur.
M. R. 21. Blé d'Odessa sans barbes (de M. Bonfils).
22. Blé Marselage.
M. R. 19. Blé de Haie, ou blanc velouté.

18. Blé du Chili.
M. R. 25. Blé d'hiver rouge des environs de Paris. (Froment rouge ordinaire sans barbes *M. R.*)
M. R. 24. Blé de Mars rouge sans barbes.
33. Blé rouge des environs de l'Aigle.
M. R. 28. Ble Lammas.
M. R. 32. Blé du Caucase rouge sans barbes.
M. R. 35. Blé rouge velu de Crète.
M. R. 34. Blé de Mars carré de Sicile.

B. *Variétés barbues.* (*Bearded Vars.*)
M. R. 36. Blé barbu d'hiver ordinaire. (Froment barbu d'hiver à épi jaunâtre *M.R.*)
M. R. 38. Blé de Mars barbu ordinaire.
M. R. 39. Blé de Mars barbu de Toscane à chapeaux.
M. R. 44. Blé du Cap.
42. Blé du Caucase barbu.
M. R. 45. Blé Hérisson.
49. Blé d'Odessa rouge barbu (de la Chine, M. Laquesnerie).

II. *Tri'ticum tu'rgidum.* Froment renflé, ou Poulard.

A. *E'pi glabre, ou lisse.* (*Chaff smooth.*)
M. R. 51. Poulard blanc lisse
55. Blé du Nord.
M. R. 57. Pétanielle blanche d'Orient.
M. R. 58. Garagnon de la Lozère.
M. R. 66. Poulard rouge lisse du Gatinais.
68. Poulard d'Auvergne à épillets élargis.

B. *E'pi velu.* (*Chaff hairy.*)
M. R. 63. Poulard blanc velu.
74. Poulard roux velu de Beauce.
75. Poulard d'Auvergne à épi long.
79. Pétanielle rousse, ou grossaille.
M. R. 79. *bis.* Gros Turquet.
M. R. 80. Blé de Ste. Hélène.
82. Poulard carré velouté.
M. R. 85. Blé bleu conique.
M. R. 88. Pétanielle noire de Nice.
M. R. 90. Blé de miracle, ou de Smyrne (*Tríticum* compósitum).

III. *Tri'ticum polo'nicum.*

M. R. 92. Blé de Pologne à épi long.

IV. *Tri'ticum du'rum.* Froment dur, ou corné.

M. R. 95. Blé dur d'Afrique (Triménia barbu de Sicile).
99. Gros Taganrock (plate talé, Desvaux).
100. Taganrock à barbes noires.
104. Plat roux. (Desvaux.)

V. *Tri'ticum Spe'lta.* Froment épeautre.

M. R. 106. Epeautre sans barbes ordinaire.
107. Epeautre rousse lisse épi grêle.
M. R. 108. Epeautre noire barbue velue.

VI. *Tri'ticum amy'leum.* Froment amidonnier.

M. R. 109. Amidonnier blanc.
112. Amidonnier roux.

VII. *Tri'ticum monoco'ccum.* Froment engrain.

M. R. 115. Engrain commun du Gatinais.

The grains of the above kinds of wheat we shall give away to any person who will undertake to grow them all, for not less than three years; and, at the end of that time, report to us as to their comparative value. — *Cond.*

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Malaria. — *The Soils and Situations* productive of malaria are various. Every soil that is continually moist on the surface, whether from the luxuriance of vegetation or other causes, is productive of this pestilential vapour. Marshes everywhere, even salt marshes, rice grounds, reed grounds, osier grounds, moist woods, peat lands liable to putrefy, all lands productive of rushes and other marsh plants; all lands, in short, requiring draining, and all plantations requiring thinning; moist ditches, moist dunghills, decaying vegetables; sheds, hot-houses, conservatories, or hot-beds; dirty streets, dirty houses, dirty clothes, and an unwashed person.

The matter of malaria is connected with fogs, vapour, mist, and a moist atmosphere generally. The east winds of England bring the malaria from Holland. A dry air is seldom a conductor of miasmata. Evening rambles in the country are dangerous at all seasons, but more especially when the atmosphere is moist. It seems that in the damp climate of Holland, a stimulus of a moderate dram of brandy or other ardent spirit, taken in the morning with a crust of bread, when you are compelled to go out early, is a reasonable preventive; and, in general, a generous diet, avoiding excess both in eating and drinking, contributes to maintain health in malaria countries. This is of universal remark in Europe and America. Fires in the rooms in the evenings and mornings, even of summer and autumn, while the dew is on the ground, are of undoubted use. A gauze veil, or *conopeum*, Dr. M'Culloch has heard of, as a guard against malaria; and speaks in terms of respect as to its probable use. We also have a good opinion of this preventive, for reasons that have not occurred to him.

Malaria must be a chemical compound, and, therefore, decomposible. Dr. M'Culloch considers that it is decomposed by fire and smoke, and that it may be excluded, in a great degree, by a gauze veil. Hence the large fires kindled in Rome in the summer evenings, and hence, perhaps, the instinctive prevalence of smoking tobacco in Holland, and more or less in most countries of the world. Draining all lands whatever, elevating the situation of all dwellings whatever, generous living, good fires, and warm clothing, great personal and household cleanliness, perhaps smoking tobacco, where the other requisites can be but imperfectly obtained, are all that we can do to shield us from this everywhere present evil. — *Cond.*

An Ash at Moccas Court, growing on the edge of a dingle, with immensely large roots, which run along the surface down the side of the dingle for upwards of 50 ft. contains 1003 cubic ft. of timber. The trunk is 30 ft. high, without a branch; and girts, at 10 ft. from the ground, 20 ft. 6 in. — *J. Webster. Moccas Court, Feb.* 1836.

Mr. Webster informs us that many of the acorns, and also many young plants, have been distributed at different times all over the kingdom. We should like much to receive notices of these, and particularly if any are in the neighbourhood of London, in order to refer to them when treating of the oak in our *Arboretum Britannicum*. A drawing of a very beautiful weeping oak at Baden was sent to us some time ago by an English nobleman, a member of whose family had sketched it from nature, but it appears quite different from the one at Moccas Court. — *Cond.*

Art. II. *Queries and Answers.*

Cereus heptagònus. — I think the cereus mentioned by your correspondent, J. Clark, flowered at Apley Castle, Shropshire, in 1833. The plant, when I saw it, was at least 10 ft. high, and had been cut down, so as to give it room to stand in the back of the vinery. — *C. M. G. Dulwich, Dec.* 1836.

Effects of Soap Ashes. — Could you, or any of your numerous correspondents,

give any information on the effects of soap ashes upon strong clayey soil; and if they kill worms and slugs in the ground whereon they are put? Also, if lime mixed with sand and made into mortar, before digging it into the soil, is preferable to being used in the common way, for the destruction of those vermin. — *C. M. G. Dulwich, Dec* 1836.

Art. III. *The London Horticultural Society and Garden.*

Meeting, December 6. — The Right Hon. Lady Anne Baird was balloted for, and duly elected a Fellow.

Exhibited. Plants. A splendid specimen of Poinsétt*ia* pulchérrima, and a fine plant of E'pacris mirábilis, from Mrs. Lawrence. Lucùl*ia* gratíssima, from Mr. J. Falconer. Cattlèy*a* guttàta, from R. Harrison, Esq. Caméll*ia* Donkelàer*i*, and *E*uphórb*ia* jacquin*iaeflòra*, from Mr. Low. Twenty varieties of *C*hrysánthemum, from Messrs. Chandler. *C*áctus truncàta, Justíc*ia* speciòsa, Thunbérg*ia* alàta, Cypripèdium insígne, C. venústum, *E*rìca pyramidàlis, *E.* elàta, and Begòn*ia* insígnis, from Mr. J. Green, gardener to Sir Edmund Antrobus. Seedling chrysanthemum, from Mr. Stewart, gardener to Lord Ashburton. — *Cut Flowers. C*áctus sp., Cliánthus puníceus, Bignòn*ia* venústa, Phàius grandifòlius, Blèt*ia hyacinthöides*, Azàlea índica purpùrea plèno flòre, and camellias, from the gardens of the Misses Trevor, Tingrith House, Bedfordshire. — *Fruits.* Six pine-apples, from Mr. Lyne, gardener at Haworth Park, Middlesex. Monstrous queen pine, from Sir C. Cockerell. Cling pippins, from John Motteux, Esq. Seedling apples (33 sorts), from Mr. J. Oliver, Coombe Abbey, near Coventry.

From the Garden of the Society. Plants. Phàius grandifòlius, a magnificent specimen; *C*rìnum amábile, *S*ìda pulchélla. Chrysanthemums: Curled blush, golden lotus-flowered, superb clustered yellow, golden yellow, quilled light purple, quilled flamed yellow, rosy purple, two-coloured red; Wheeler's expanded rose, Wheeler's starry blush, Wheeler's flat pink, Wheeler's dwarf pale rose, and changeable yellow, *C*hrysánthemum Wheeler*iànum*, seedlings 83. 93. 96. 99., paper white, king, starry purple, semidouble quilled white, Park's small yellow, curled lilac, rose or lilac, quilled yellow, late yellow, pale flame yellow, brown purple, superb white, changeable pale buff. — *Fruits.* Pears. Beurré diel, bergamot cadet, beurré d'Aremberg (from standards, on which it does not succeed so well as the glout morceau), glout morceau, Bezi Vaet, bon Chrétien Turc (from a standard, a great bearer, but only fit for stewing), winter crassane (one of Mr. Knight's new sorts; hardy, and succeeds on standards), St. Germain, bergamotte bronzée (first time of fruiting in this country; moderate quality), Bezi de Caissoy, passe-Colmar, Dumas (or *Monsieur le Curé* otherwise called *poire de Clion*, and the same as Wilmot's new pear; also called the *Vicar of Wakefield*). Apples. Dessert: Golden reinette, Court of Wick, yellow pippin, London pippin, St. Julian, Beachamwell, Dutch mignonne, Braddick's nonpareil. Kitchen: Hollandbury, Hormead pearmain, Tower of Glammis, Bedfordshire foundling, Franklin's golden pippin, old golden pippin, golden Harvey, Barcelona pearmain, Jerusalemsæble. This last was originally received from Denmark; and, though handsome, has no great merit besides novelty.

Read. An account of some further experiments made in the garden of the Society, in the year 1836, relative to the cultivation of potatoes, by Mr. R. Thompson.

Medals awarded. A silver Knightian medal was awarded to Mr. J. Falconer, for Lucùl*ia* gratíssima; to Mrs. Lawrence, for Poinsétt*ia* pulchérrima; to Mr. Green, for Begòn*ia* insígnis; to Mr. Low, for *E*uphórb*ia* jacquin*flòra*; to R. Harrison, Esq., for Cattlèy*a* guttàta; to Mr. Chandler, for Jersey chrysanthemums; and to Mr. Lyne, for two Providence pines.

THE

GARDENER'S MAGAZINE,

FEBRUARY, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *On the Importance of Gardeners' possessing general and scientific Knowledge, for the Purpose of effecting Improvements in their Art.* By ROBERT FISH. Read at a Meeting of the West London Gardeners' Association, Dec. 19. 1836; and communicated to the *Gardener's Magazine* in consequence of a Resolution passed by that Society.

KNOWLEDGE and ignorance are opposite, and yet, to a certain extent, are correlative and convertible terms. To enable a man to make a definition of what knowledge is, he must first be able to give a true description of its counterpart. Hence the sentiments we entertain respecting knowledge or ignorance will bear an exact analogy to the progress which we have made in the acquisition of knowledge. The sages of India or of Egypt would entertain ideas concerning knowledge as different from those conceived of it by the modern philosophers of Europe, as would be found exemplified in the case of the untutored peasant boy, when contrasted with the genius and the intellect of a Newton. Nor would the ideas of these respective classes concerning knowledge be more diversified, than the effects of the knowledge possessed by each would be varied. In individuals of the first class, we should have seen as much superiority in knowledge as was sufficient to fill the minds of its possessors with self-gratulation, and to inspire them with contempt and derision for the ignorant around them: but, in individuals of the latter class, we are forcibly struck by the fact, that the more expanded their intellect has become, and the greater the range of knowledge over which they have travelled, the more have they been distinguished for condescension of manners, and humility of spirit. Instances, indeed, may occur of individuals of splendid attainments regulating their conduct by narrow-minded principles; but we are willing to believe that such instances are rare. We do not, therefore, contend that the

possession of great knowledge is always followed by philanthropic views; but we do contend that, from the prejudices it subverts, the respect to the opinion of others it engenders, and the feeling of self-deficiency it inspires, it exerts a powerful influence in promoting feelings of kindness between man and man; teaching us that our pursuit of happiness will be vain, unless we associate that pursuit with attempts to promote the happiness of others. Independently, then, of the personal advantages which the possession of general and scientific knowledge confers, we consider that, from the friendly collision between kindred minds which it encourages, and the habits of reflection and investigation it produces, we are fully warranted in urging its importance upon the attention of gardeners, convinced that its acquisition will put within their reach a powerful command of mechanism for effecting improvements in their art.

This will farther appear, if we reflect upon the improvements which have been made in gardening and other sciences, the means by which these improvements have been effected, and the doubts and uncertainties under which we still labour.

In the first place, then, it might almost be left as a self-evident proposition, that every art and science is advancing in the course of improvement. To deny such a position, would be tantamount to asserting that man's attainments in knowledge had remained stationary, if they had not become retrogressive. This opinion is held by some; but in it we cannot agree; for, independently of the fact that, while some countries have become enlightened, others have receded into barbarism; independently, too, of the fact, that for centuries the human mind wasted its powers in profitlessly roaming amid the mazes of a false philosophy; we do consider that the wonderful discoveries which have been made, and the strong energetic desire of invention which distinguishes the period in which we live, warrant us in coming to the conclusion, that knowledge and improvement are advancing with a giant's pace, and that every seeming drawback only resembles the ebbing ripple which accompanies the waves of the flowing tide. Nor have we any reason for believing that the art of gardening has alone remained uninfluenced by the onward movement. It is now far from enough that a gardener should know when to plant or sow, or how to handle dexterously a spade or a hoe. The gardener who aims at excelling must act upon the principle that his profession is one of enquiry, one in which practice ought to be based upon scientific induction. True, we are in doubt and uncertainty respecting many of the primary principles of gardening; and the ardent investigator may have his ardour sobered down amid the diversity of opinions with which he is surrounded, each alike presenting its peculiar claims for his acceptance. But, while this diversity of sentiment proves

that there is a great want of fixed incontrovertible principles, it also proves that, whether or not improvements have been effected in the past, new discoveries will be brought to light in the future. This conclusion we arrive at, because, where great diversity of opinion exists, an evidence is adduced that the mind has been aroused from its lethargy, and no longer bounds its belief by the extent and nature of another man's faith. Amid unity of sentiment, where men are ignorant, or tamely yield acquiescence to principles upon which their faculties had never been exercised, we cannot see how knowledge will advance, or improvements take place: but we can have no hesitation in guaranteeing that such will be the case when diversity of opinion exists, as the effect of study, and the consequence of research. If the knowledge of gardening were not rapidly progressing, what reason could we assign for the fact, that such a number of horticultural periodicals should be issued, supported, too, not so much by gardeners as by the public at large; alike ministering to the happiness and comforts of the wealthy nobleman and the industrious artisan. In visiting the villa of the merchant, or the country house of the gentleman, and observing upon the tables of the library several of the gardening periodicals, one cannot resist the conviction, not only that the knowledge of our art is rapidly extending, but also that, if we keep not pace with the onward movement, or, rather, be not competent to give that movement direction, no inattention or carelessness of ours will impede the march of improvement. But let it be impressed upon our minds, that, if improvements are effected independently of our exertions, the time will come when these improvements will be acted upon without our superintending care. Men of all classes will become their own gardeners; and the professors of gardening, instead of being distinguished for the confidence reposed in them, and the mental acquirements of which they were once the possessors, will be degraded to the condition of mere delvers of the soil, and neither possess that respectability, nor receive that remuneration, which they have hitherto done. To prevent such a result; to maintain the honour of the profession; to support the intellectual character which we have hitherto sustained; to keep pace with the onward march of discovery and improvement; ought to be the heartfelt desire of every gardener worthy of the name, or in whose breast one spark of true and elevated ambition resides.

This brings us to enquire what are the means by which improvements have been, and are still likely to be, effected? We answer, that, as discoveries in other arts and sciences have generally been effected by individuals of extensive knowledge, so we should consider the possession of that knowledge by gardeners as the surest pledge that they would be competent to effect im-

provements in their art. We are well aware that some departments of knowledge are more attractive to some minds than they are to others. It is, no doubt, well that such is the case; as a person, to excel, must have his mind principally directed to one channel of investigation. But we do not consider that on this account we have any right to praise one branch of science, and despise another as unworthy of our notice. If one department of science appears more wonderful than another, it will generally happen because we are not equally acquainted with both. The true philosopher, while he considers no science to be utterly beyond the grasp of his intellect, likewise considers none to be below or unworthy of his notice. He finds as much to excite his admiration in examining the structure of the humble *moss*, as in contemplating the form of what would be termed the more perfect plant; as much in investigating the phenomena revealed by microscopic agency, as in soaring amid those sublimating regions brought within his ken by telescopic vision. Still, however, there exists with many an aversion to studying certain branches of knowledge. The reason assigned is, that knowledge which does not bear most directly upon their own particular profession can be of no real utility; and its only recommendation is, that it may be amusing. This opinion is founded upon the plausible reason, that, as it takes a man a lifetime to arrive at anything like perfection in any of the sciences, it follows that, if he divide his attention and energies to the pursuit of different sciences, instead of arriving at perfection in one, he will not reach mediocrity in any. To such an argument we accede this much, that, when an individual pursues every branch of knowledge with equal ardour, he may render himself a cyclopædia of the knowledge acquired by others; but, unless in cases of extraordinary superiority of intellect, he will not be the originator of any discoveries himself. At the same time, we are fully convinced that no individual will arrive at eminence in any science, without being acquainted with those intimately connected with it. So waved and indefinite, indeed, is the line of demarcation between the different sciences, that it is impossible to say where one should end, or where another should commence. So dependent, too, are they upon each other, that, before we can study one science with advantage, we must possess a general acquaintance with several others. This must have been acted upon before any science could have arrived at its present advanced position. What, for instance, would astronomy have been, if the mind of a Newton had not been assisted and directed by a comprehensive acquaintance with the science of mathematics? What would the art of navigation be, but for the aid of astronomy and magnetism? Where, again, would our steam-engines have been, if the discovery of an Arkwright had not been im-

proved upon by the genius of a Watt, bringing in subservience to his purposes the combined knowledge of the sciences of pneumatics, hydrostatics, and mechanics? In what a situation would the healing art of medicine be placed, if it had derived no assistance from the sciences of botany and mineralogy, elucidated by the science of chemistry; and the knowledge of the structure and properties of the constituent parts of the human system, as revealed by the science of animal anatomy? Not to multiply instances, let us come to our own profession; and, in comparing the ignorant superstitious usages of the past with the comparatively enlightened practices of the present, are we not warranted in asking, if ever it would have arrived at its present position, in one and all of its subdivisions, if the influence of climate had not been studied, nor yet any attention paid to the sciences of geography, vegetable physiology, and chemistry as applied to the analysis of the substances of which plants are composed, and of the constituent parts of the soil in which they grow? From what has been stated, we consider that it will be apparent to all, that it is of great importance to possess a stock of general information, which at all times can be brought to bear upon our own particular profession.

The condition of gardening is now such, that little improvement can be expected from holding on in the same beaten track. We must strike out a fresh path, by bringing the facts and principles of other sciences to bear upon our own. To do this, there is an absolute necessity, and also a high source of encouragement. A necessity, because it will not now do to tell our employers that such a thing is, because it is; as he will expect to receive a rational account for the success or failure of all our operations, and, what is more, will very likely himself be able to detect the cause of either: an encouragement, not merely because the field is extensive, and almost unexplored, but also because most of those who have attempted to elucidate the science of gardening have been strangers to practical details, and, hence, have sometimes been misled; which is not so likely to be the case with those who combine the knowledge of scientific principles with the carrying of these principles into operation.

We now proceed to consider the importance of general and scientific knowledge, for clearing up the doubts and uncertainties under which we still labour. We have adverted to diversity of sentiment as a proof that knowledge is progressing; we now refer to the same fact as a proof that our knowledge is far from perfection. Few indeed are the points, either in science or practice, on which we are wholly agreed. As the objects of our care are organic beings, and the circumstances in which they are placed extremely varied, it is scarcely to be wondered at, that the opinions of well-meaning men should be so very different.

To reconcile these discrepancies, a greater generalising power must be put in operation. A gardener would then see that a process which succeeded well under his management would not answer equally well under that of his neighbour, unless all circumstances were alike. Hence the superiority which one scientific principle of action possesses over a load of mere practical directions. In the former case, operations are regulated according to circumstances and situation; in the latter, operations are performed in every circumstance alike. Thus, too, a knowledge of the sciences upon which the first principles of gardening are founded would lead to greater unanimity upon points which are now subjects of dispute. The questions respecting what a plant is; what are its modes of accretion; does the sap descend? is there a circulation of fluids? is the sap organisable? is it capable of expanding, under the direction of the vital principle, what the plant contained in embryo? or does all accretion proceed from the expansion of a rudimental membrane, named the vital envelope, as contended for by one of the most experienced physiologists of the day? are questions which will be satisfactorily solved only when we become better acquainted with the diversified structure and habits of the vegetable world. What the food of plants is; how that food can be most economically and plentifully supplied; what are the uses of leaves; whether are they digestive, respirative, or excretory organs, or all united; how to know the fitness of a soil for certain crops; the mechanical operations most suitable; the kind of manure most appropriate; the state in which that manure ought to be, whether fresh, partly or wholly decomposed; will only be known when we possess a greater acquaintance with chemical principles, and the nature of the crops we wish to raise. Whether the system of forcing generally adopted, of keeping nearly a uniform temperature by day and by night, or one more in unison with nature, be followed, will depend not so much upon the result, as upon the knowledge of the influence of heat, when not acting in unison with the decomposing agency of light. Not to be tedious, we may refer to the insect tribes by which we are assailed, and ask if there is much likelihood that, with all our many recipes, we shall be able to put a stop to the ravages of the turnip fly, the devastations of the thrips, and the molestation of many others, if no one acquainted with the science of entomology will bring his investigations to bear upon the subject?

Some of the sciences above referred to, for instance, entomology, we confess we have little or no knowledge of; but we refer to it, as well as to others, in support of our general proposition, and in the hope that some may be induced to give it, as well as others, a share of their attention. Were we all to study with equal ardour the same departments of knowledge, we

should fail to render our Society one of mutual instruction, which we will undoubtedly do, when each and every member, following his own taste and inclination, shall lay the result of his researches before the Society, proving that he is alike willing to impart and receive information. It is only from acting thus that the full advantage which such an institution is capable of affording can be realised; when, mind acting upon mind, the developement of one man's genius animates, enkindles, and expands the genius of his neighbour. Thus acting, we shall likewise be lending our efforts "to engraft the scattered branches of knowledge upon one living stock; to make the same vital sap circulate through them all; to clothe their naked outline with the blossoms of a new spring;" to expand our own hearts with the sentiments of truth and benevolence; to triumph over the natural principle of selfishness; and, shedding around us a halo of philanthropic love, to prove that, if our abilities were equal to our wishes, there would neither be misery nor sorrow, ignorance nor delusion, in the world.

ART. II. *On the Gardeners and Gardening of Russia.* By N. N.

IN reply to your enquiries how the market-gardeners in Russia employ their time during the winter months, I must, to render myself more comprehensible, divide them into two classes.

The first class consists of gardeners who take care of hot-houses and green-houses where early forcing is resorted to; and they have continual employment in the management of pines, flowers in pots, and early fruit trees; they also raise cucumbers, kidney-beans, salads, strawberries, &c., in hot-houses occasionally, even before the commencement of the new year, but most certainly soon after it. Thus this division of gardeners is never without work; and the out-of-door labourers are discharged till spring.

The second class requires a more detailed description, because their way of life differs from that of any set of men in England. The greatest part of these gardeners come from the district of Rostoff, so that, at a distance from their home, a gardener and Rostovite are synonymous terms. A few come from the neighbouring district of Ouglitch; but so few, that they are lost under the former appellation.

Generally about the middle of Lent, or towards the beginning of it, they leave their villages; and such as have property buy horses, and load them with frozen pork, garden seeds, linen, onions, and other smaller articles not worth enumerating, but suited to the part of the empire to which they direct their steps. On arrival at their place of destination, they, in most cases, sell

their horses to profit, as well as their venture, and then begin their gardening operations, first by early hot-beds, but, as soon as the ground is thawed, by general cultivation. When the winter sets in, they collect their debts, and go back to their respective villages, waiting for the return of their migratory season; for spring it cannot be called. They are a most industrious race of men, and spread over almost every part of the empire which is somewhat advanced in the comforts of life; even as far as Poland, and down to Abo, on the Gulf of Bothnia. A few, of course, remain in the great towns during the winter; but they must be viewed more as shopkeepers than gardeners; for their time is spent in vending vegetables, which they preserve through the severe season in a masterly way; so that the green cellars in Petersburg are well worth visiting in the months of December, January, and February; keeping, however, the climate in view, and not expecting to meet with a counterpart of Covent Garden.

Rostoff is 797 wersts, and Ouglitch 732 wersts, distant from Petersburg: each werst being 3500 ft. and the gardeners travel this distance (nearly 700 English miles) twice every year.

The young peas (see Vol. XII. p. 95.) I sent you, and about which you enquire, are dried in the interior, as labour is too valuable, and the demand for vegetables too extensive, to allow of their preparation near the capital. The process, as far as I can learn, is, after being shelled, to throw them into boiling water, and just scald them; next to put them on linen and let them dry, but not in the sun, as that would bleach them; occasionally turning them over, to prevent their moulding. Lastly, they must be put on paper, and dried on the top of the oven, as, by keeping them in the inside of it, though a cool oven, they would damp; or, in preference, they are put on a flue used as a bedstead, where the Russians deposit a bed and pillows, and, employing it generally for a siesta, enjoy the luxury of the warmth it imparts, which rises up about them, and lulls them to repose. The migration of the working class is not confined to gardeners, but carpenters, bricklayers, masons, &c., follow the same plan.

Cronstadt, May 6. 1836.

ART. III. *Botanical and Horticultural Tour in Lombardy.* By GIUSEPPE MANETTI.

(*Continued from* Vol. XII. p. 450.)

THE Garden of Casa Ulrich, near Milan. — This beautiful garden contains about 20 Milanese perches; and it was laid out by a German, about 20 years ago. The present gardener, Signor Mose Mavari, is however, improving it every day. There is a

green-house, in which are cultivated about 300 camellias; among which are C. reticulàta, and the most recent varieties. *R*hododéndron arbòreum hýbridum, *R.* a. mutábile, *R.* a. Cunninghàm*ii*, *R.* a. Russell*iànum*, *R.* a. Gowen*iànum*, *R.* a. álta-clerénse, *R.* campanulàtum, *R.* phœníceum, *R.* Smíth*ii*, ?*R.* nazarèthium, ?*R.* triúmphans; *A*bies Douglàs*ii*; *Araucària* excélsa, about 8 ft. high; *A.* Cunninghàm*i*, the same height; *A.* alàta, *A.* imbricàta, *A.* brasiliàna; *J*uníperus péndula, *J.* recúrva, *J.* repánda; ? *T*áxus *n*eriifòlia, ? *T.* Sieból*dtii*, Andrómed*a* arbòrea; Magnò*lia* gigantèa, M. máxima, M. triúmphans, M. Soulang*iàna*, M. Norbért*ii*, M. Alexandrìn*æ*, M. Candólli; are also in the green-houses. The following, in the open air, are worthy of notice: — *R*òsa odoratíssima, *R.* Smíth*ii*, *R.* Noisette Duprey; *M*éspilus (Eriobótrya) japónica, *P*ìnus austràlis (palústris); *Rìbes* sanguíneum; *Catálpa syringæ*fòlia, 40 ft. high, diameter of the trunk 1 ft. 6 in., and that of the head 28 ft.; Magnò*lia* rústica (ferrugínea), 15 ft. high, and 2 in. in diameter; *A*lnus glutinòsa laciniàta, 60 ft. high, diameter of the trunk 1 ft. 6 in., and of the head 28 ft.; *C*èdrus Libàni, 25 ft. high, diameter of the stem 6 in.; *T*ília álba, 55 ft. high, diameter of the trunk 1 ft. 9 in., and of the head 26 ft.; *T.* a. *a*splenifòlia, 10 ft. high; and a fine group of *R*hododéndron pónticum and *R.* máximum.

The Garden of Casa Nova. — This very small garden is worthy of notice, on account of the following plants: — Gledítsch*ia* triacánthos, 25 years old, 85 ft. high, diameter of the trunk 2 ft. 6 in.; Stercùlia *p*latanifòlia, of the same age, 50 ft. high, diameter of the trunk 2 ft., and the head 38 ft. This is the most beautiful specimen of the species I have ever seen. It does not stand unprotected at Monza. Lagerstrœ`m*ia* índica, 25 ft. high, and its principal trunk 1 ft. in diameter.

The Garden of SS. Negri, Brothers. — This small garden is kept so well, that it shows the owners to be devoted to Flora. Messrs. Negri were the first in Lombardy who flowered a camellia they had raised from seed: they called it Caméll*ia n*eriiflòra, from its having the appearance of the flower of the *N*èrium Oleánder spléndens. In their green-house are more than 1500 plants of camellias, a beautiful plant of *Araucària* brasiliàna, *A.* excélsa, Bánks*ia f*agifòlia; and, in the hot-house, Eugèn*ia* nervòsa, E. macrophýlla, *C*hamæ`rops *Palmétto*, Strelítz*ia* regìnæ, S. *j*úncea, Dillèni*a* speciòsa, Zàmia púngens, Córypha hýstrix, C. mìtis, *Latània* sinénsis, Theophrást*a* longifòlia, and the *M*ùsa *r*osàcea, were in full flower on the 10th of June.

The nights of the 1st and 2d of the current month, the temperature was so low as 3° below zero. I was afraid of my *O*'xalis crenàta, as the haulm was gone, and took them up; when from the 28 tubers which I planted I found 5 lb. Milanese, that is 140 oz., which were from the size of a pea to that of a walnut. The

largest weighed 9 *denari* (6 gr.), and was of the length of 7 *punti*, and the diameter $1\frac{5}{4}$ in. of the Milan yard. — *Monza, Nov.* 1. 1836.

ART. IV. *An improved Mode of painting, lettering, and varnishing Tallies.* By W. A. NESFIELD.

YOU requested me to forward my observations on the tallies in the arboretum at Chatsworth, which, in September last, I perceived had already suffered from the weather; that is, some of the white letters had begun to run together, or wash away; which I attribute to the use of common house-painters' *vehicle* and *colour*. Whether lettering be on an extensive scale or not, it is a matter of much importance to obviate this defect. I therefore feel persuaded that the following method is worth notice, as it will resist the effect of damp for many years, although it incurs a trifling additional expense.

Mr. Paxton's preparation of the wood cannot be better; viz. "steaming the heart of oak, in order to draw out the sap, and then boiling it in linseed oil;" but, instead of painting a black ground, I would substitute a very dark lead-colour, composed of ivory black (not lampblack) and flake white, mixed with boiled linseed oil. My reason for disapproving of a pure black ground is founded on the fact, that certain colours, having a greater affinity for water than for oil (such as blacks, umbers, and ochres), are liable to be affected by damp, unless they are held together by a powerfully oleaginous vehicle, with a small portion of white lead; the latter not only resisting wet admirably, but causing whatever is incorporated with it to dry harder and sooner, and likewise giving a degree of consistency to the ivory black, which is in itself very transparent. The tint of the dark lead-coloured ground, which I would prefer to the black, would have the same relief for the letters; because I should use pure white, which is so much more brilliant than that which is commonly used, and which is so much *adulterated with Paris white*. In fact, what the proposed ground loses in intensity, the white letters would gain in brilliancy; which, therefore, would about equal real black and bad yellow-looking white. Again, I would, after three coats of the lead-coloured ground, use, as a vehicle for the white lead, copal varnish and nut oil, mixed in nearly equal quantities, allowing the latter rather to predominate, that the painter's pencil may not clog. It is also desirable that the white should be used as thick (or, more technically, as *fat*) as it will flow, because the letters would be so much the more opaque; and the varnish should be mixed with only a small quantity at a time, such as enough for half a day's work, since it *sets* very rapidly. Turpentine must be avoided *in toto* (except

for cleaning pencils), as it not only soon evaporates, but causes colour to look dead and chalky; whereas the varnish bears out and hardens as it becomes older. My reason for proposing varnish to be used with the letters only is, because damp is apt to cause what is termed a chill, which would be visible on the dark colour, but *not on the white.* The best quality of the colours in question is to be had at Messrs. Robertson and Miller's, 51. Long Acre, whose prices are, for flake white, per bladder, weighing ¼ lb., 1*s.*; ivory black, ditto, 1*s.*; oil, per pint, 2*s.*; copal varnish, per pint, 6*s.* Two shilling bottles of copal would be sufficient for an immense quantity of lettering.

Finchley, Nov. 11. 1836.

ART. V. *Notices of Gardens and Country Seats in Great Britain and Ireland, supplementary to, or corrective of, the Notices given in the "Encyclopædia of Gardening."* By various Contributors.

SOME of our readers having expressed surprise at our having noticed small residences in our *Encyclopædia of Gardening*, while we omitted all notice of larger ones; and others having complained of inaccuracy in our statements, we have determined on commencing the present article, and continuing it for some time, so as to give such of our readers as wish to supply us with corrections and additions an opportunity of doing so. As the article will always be printed in a smaller type than that of the other original communications, it will not interfere much with the usual matter of the Magazine. If those who send us notices will, at the same time, send us views, ground plans, or sketches of trees, or of any remarkable object on the residence of which they send us a notice, we shall endeavour to have them neatly engraved, unless in cases where the expense would be too great.

SCOTLAND.

The Park of Blairdrummond, near Stirling, the Residence of William Holm Drummond, Esq., is laid out in the English style: it lies on the south-west bank of the river Teith, about six miles from Stirling. To the south and east of the house it has a beautiful level surface; on the south-west is an artificial lake, about 1000 yards in length, encompassing a beautiful wooded island; to the north and west of the house the ground is more elevated, and finely undulated. Next to the house, on the north and west, is a fine grove of large oaks, beeches, larches, Weymouth pines, &c. The walks in this grove command a fine view of the western extremity of the Ochil Hills, Abbey Craig, Castle of Stirling, Craigforth, Campsie Hills, and several gentlemen's seats. From the park and approaches, north-west of this, are views of Ben Lomond, and some of the Grampian Hills, such as Ben Ledie, Ben Voirloch, and the fine old ruin of Doune Castle. The extensive walks and shrubberies lie on the north-west of the grove. The shrubberies, at the time they had been planted, contained a first-rate collection of hardy shrubs and trees; some of which are now very ornamental, and of great size. The garden and nursery lie on the north-west of the shrubberies: the garden contains about 2 acres and 3 roods, enclosed by a brick wall 13 ft. high; and the side slips contain about 2 acres. There are two peach houses, a vinery, a stove, and two ranges of melon pits, erected in 1834, on a somewhat new principle, which you can have an account of, at some future period, for your Magazine. The nursery contains about an acre and a half. — *James Drummond, Gardener. Blairdrummond, July* 7. 1836.

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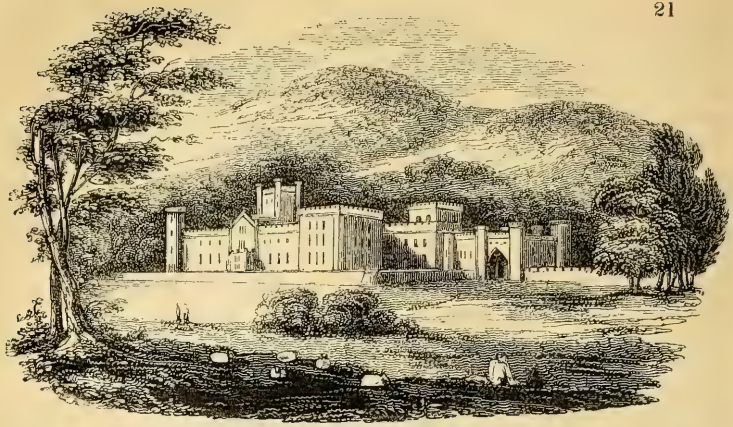

Kinfauns Castle, near Perth, the Seat of the Right Hon. Lord Grey. — This residence, about three miles to the east of Perth, is situated on the south side of the Sidlaw Hills, a range of hills and mountains which stretches along the north side of the river Tay, from Perth towards Forfar. The scenery belonging to Kinfauns, whether really or by appropriation, may, therefore, easily be conceived to consist of two grand divisions; the hilly background of pasture and woodlands, and the alluvial cultivated plain bounded by the Tay. These alluvial soils are known in Scotland by the name of carse lands: they are considered the richest in the country, and particularly adapted to the growth of beans and wheat. The Kinfauns estate consists of a portion both of the hilly grounds and carse lands; and no inconsiderable part of the rental arises from the right of fishing on the Tay.

The castle (*fig.* 21.) is in the Gothic style, by Sir Robert Smirke, and was completed about 1824; and Mr. Gilpin, and various other landscape-gardeners, have been consulted respecting the laying out of the grounds. The kitchen-garden was formed about twenty years ago, by Mr. Campbell, an excellent gardener: it is situated at the bottom of the rising grounds, and consists of about two acres of alluvial soil, enclosed by brick walls, in the form of a square. These walls are covered with beautifully trained fruit trees, which are highly productive. The soil and situation are peculiarly favourable for the apple: some of the sort known as the Tower of Glamis have been grown here, measuring 14 in. and 15 in. in circumference, and weighing 1 lb. each. The Kinfauns pippin was raised here from seed by Mr. Campbell, for which he obtained the gold medal of the Caledonian Horticultural Society. He also raised the white apple of Kinfauns, a fruit of great merit. There is a range of hot-houses, 219 ft. in length, devoted to peaches and grapes; with a small stove for plants, and some pits. There are a few herbaceous plants, but not many American or other exotic trees and shrubs. The present gardener is Mr. Robertson, from Kew.

The plantations on the elevated grounds are considerable: the castle appears backed by an amphitheatre of wood, the lower part chiefly of deciduous timber trees, and the upper terminating in Scotch pine. The trunks of these trees, rising boldly from the surface of the steepest declivities, and clothing them with verdure, excite ideas of the creative power of vegetable nature, and leave a grand impression upon the imagination. To the eastward is a conical hill, entirely covered with wood, the most elevated portion being Scotch pine. Upon the summit a tower has been erected.

The two grand features in the views from Kinfauns are, the Tay and the Hill of Kinoul. In the former are several islands; one, nearly opposite to the

Castle, contains 30 or 40 acres of arable land; another, a little farther down, and of less dimensions, is entirely covered with wood. In following the course of the river to the eastward, the junction of the Erne is perceived, and a considerable variety produced by the different islands, and the sinuosities of the shore. The Hill of Kinoul is seen about a mile to the westward of the Castle, presenting a broken range of rocks of various heights, and, in some places, with perpendicular precipices of 300 ft. Half the height of this hill, indeed, appears to be of perpendicular rocks, rising out of a slope of debris, which, about ten or twelve years ago, was planted. This hill has been long celebrated for the agates found on it: bloodstone has also been found there; and, also, the Linnæ'*a* boreàlis. Potentílla argéntea, *L*actùca viròsa, Pýrola rotundifòlia, Grammìtis *Céterach*, with other plants generally considered rare in Scotland, are also to be met with on or about this hill. On the whole, Kinfauns, whether considered with regard to the beauty and grandeur of its scenery, or the fertility of its soil, may rank among the finest places of Scotland. — *W. A. B.*

ART. VI. *Design for combining all the Forcing-houses, Botanical Houses, and Pits and Frames, required for a moderate Establishment, in One Group.* By A. FORSYTH.

FIGS. 22. and 23. are intended to represent a range of hothouses, to be erected in a square of 100 ft., and to include all the houses necessary for the supply of a suburban establishment; embracing the newest and most rational arrangements, by which the various productions will be displayed to the greatest advantage; rendering the forcing-houses an elegant adjunct to the pleasure-ground; and, instead of the dismembered and dung-clad aspect for which, at the present time, they are justly excluded, forming a picturesque assemblage of buildings, connected by an agreeable promenade, and this, too, at considerably less prime cost and annual expenditure.

Without saying a word about the manner in which fruits and flowers are exhibited generally in our gardens, I come to the point of how I consider they ought to be; and, as gardening, in all its branches, has now happily become the delight of all classes, it is no inconsiderable part of the duty of a gardener to display things advantageously. A house of grapes looks best from the front, when the upper side of the leaves above the trellis, and the broad side of the clusters below, can be viewed at once; peaches, abreast; flowering plants, near the eye; cucumbers and strawberries, overhead; pines, like an amphitheatre; and melons, elevated above their foliage, under the eye.

Every one is aware that, when the eye is shaded, it expands, and is gratified; and, on the contrary, when exposed to intense light, it becomes contracted and fatigued. We are likewise aware that, if the lines of houses in a street, or the lines of apartments in a house, were separated in such a manner that a cubic room should have its base on the damp earth, and its other

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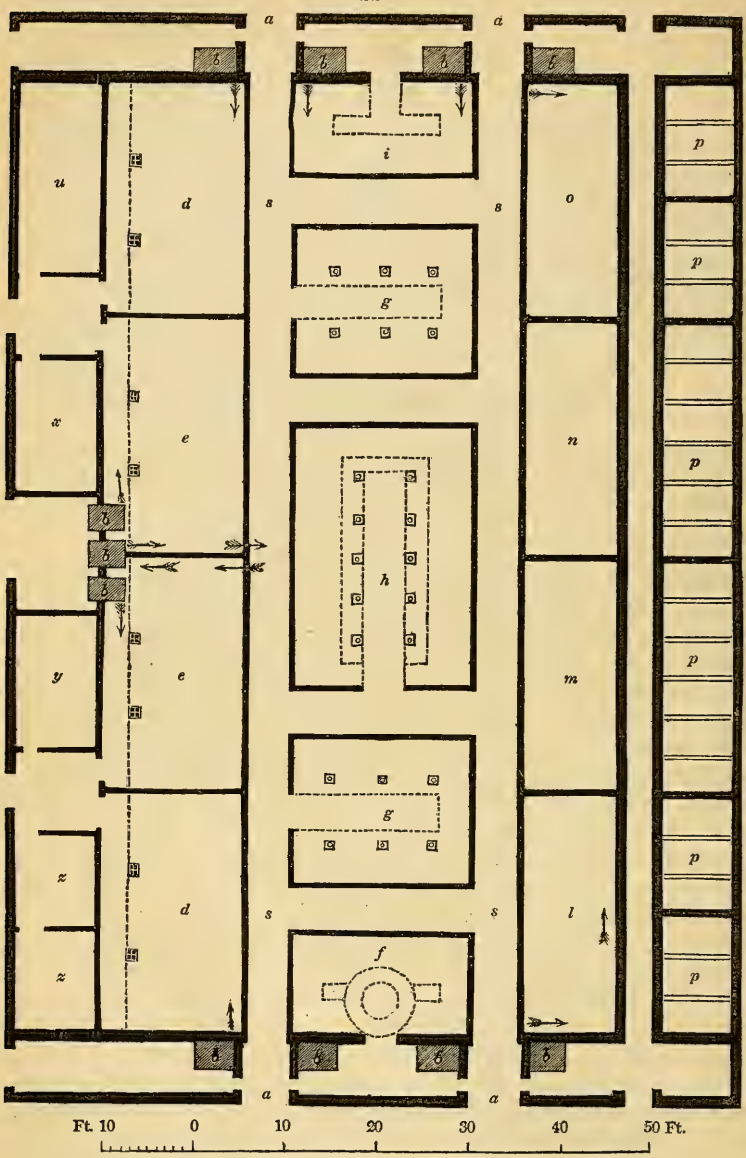
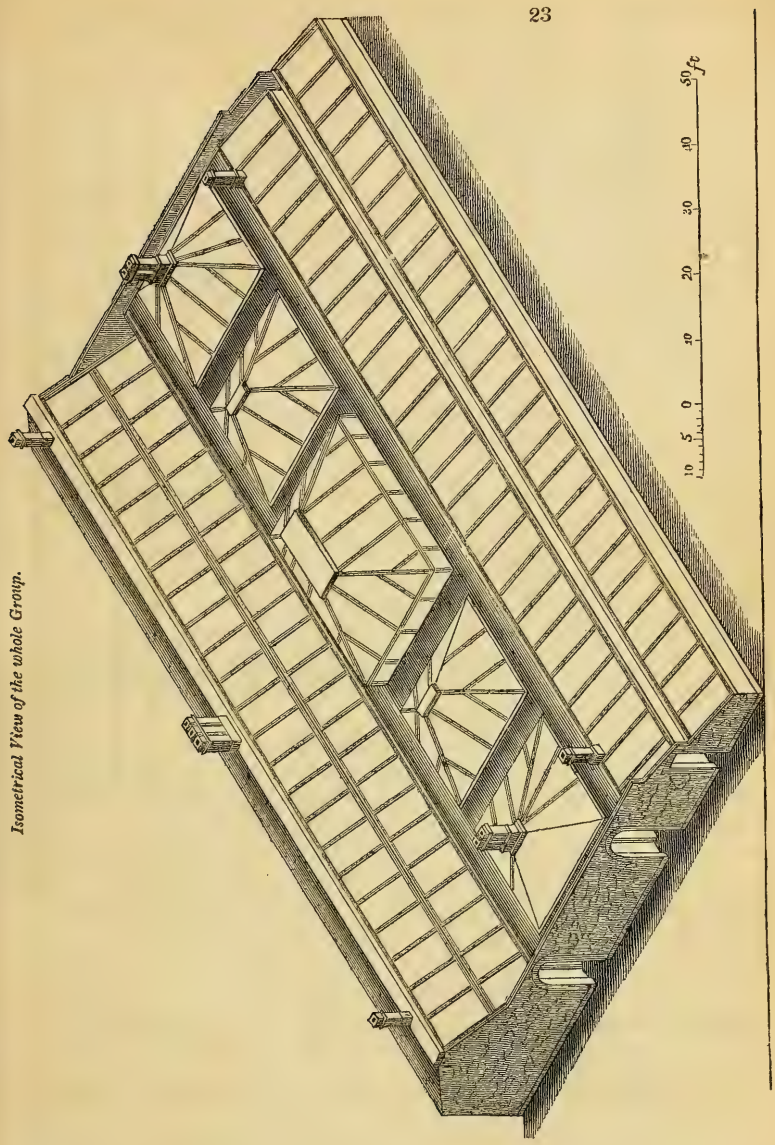


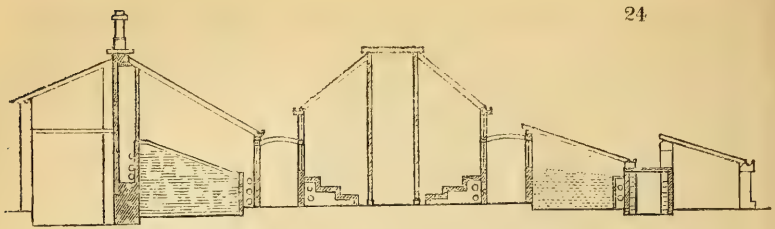
a a are the entrances; *b b*, boilers; *d d*, vineries; *e e*, pine stoves, with cucumbers in boxes on a trellis over the path; *f*, orchideous house; *g g*, peach houses; *h*, green-house; *i*, plant stove; *l*, early strawberry and late melon house; *m*, early melon house; *n* and *o*, nursing pine stoves; *p*, miscellaneous pits; *q*, passage for containing the lining for heating both pits; *s s*, paved passages for inspecting the different houses; *u*, potting-shed; *x*, tool-shed; *y*, fruit-room; *z z*, bedroom and kitchen for the foreman and his assistant.

sides exposed to the external air, and acted upon by rain, wind, and frost, it would require greater fires, and closer doors, to resist



Isometrical View of the whole Group.

cold and moisture, than it does under the present system, where the warm dry walls of one apartment materially assist to warm and dry the walls of another. We are likewise aware that light and heat pass through glass in greater portions, and to more profitable purpose, when the rays make right angles with the



Transverse Section through the Tool-shed, Pine Stoves, Green-house, Nursing Pine Stove, Pit, &c.

surface of the glass; therefore, a roof elevated to an angle equal to the latitude of the locality will be found the best receiver of solar light and heat.

Peaches require a comparatively low temperature, much light, and a free circulation of air; therefore, a span-roofed house, running north and south, the length of which is to its breadth as 3 to 2, and the diagonal ends of which are elevated to the same angle as the sides, will be found the most satisfactory for the growth of the peach; the equilibrium of temperature being more easily preserved, since the surface exposed to vertical action will recede and increase in the inverse ratio of the supply, in the same manner as the director of a windmill exposes less canvass to the gale than to the gentle breeze.

Flowering plants are beautiful, and admired by every one; but flower-pots are a necessary encumbrance by no means ornamental; therefore, they ought to be hidden from the guests, and exposed only to the gardeners.

The kitchen and bed-room for young gardeners, in this design, will have no loft over, and but one window, 3½ ft. broad by 2 ft. high, in each: the kitchen will be paved with stone, and furnished with an efficient fire-grate and appendages, a lock-up cupboard, a table, and two stout chairs. The bed-room will have a wooden floor, 1 ft. higher than the kitchen, and will contain an iron bedstead, a curtained bookcase, and a small table.

The fruit-room is to have a ventilator in the top, and a window in front with a wire-cloth screen, a wooden floor, and a small charcoal stove; and to be fitted up with two tiers of shelves, 18 in. apart, leaving a walk in the middle 4 ft. wide.

The tool-shed is to be fitted up with a rack, in which all long-handled tools will be placed, with the handles inwards, so that they can be selected from and inspected at a glance; and a few large drawers, in which small tools, such as hammers, &c., will be kept; and, for the comfort and convenience of all parties, every thing should be regularly cleaned and laid up: this, also, will have a window in the front, and a loft over.

The potting-shed will be paved with stone; and will contain a table 9 ft. long, 2 ft. 9 in. broad, and 2 ft. 6 in. high: it is to have a window in front, and a loft over.

Figs. 22. and 25. will explain all that is necessary respecting the vineries, except a leaden pipe, three fourths of an inch in diameter, perforated with holes from the upper side, about half a line in diameter, and 1 ft. apart, conducted all round, about 1 in. above the uppermost hot-water pipe, and connected with a cistern, a little elevated, for the purpose of raising vapour, by moistening the hot pipes.

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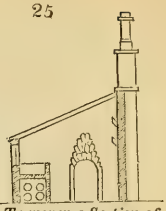

Transverse Section of the Vinery.

Through the pine stoves, the leading and return pipes will pass to the green-house. In the back of the pine stoves cucumbers may be grown in pots, 2½ ft. deep, and 13 in. in diameter, filled with rich turf (turf is indispensable; and, whether rich or poor, let it be turf); one half of the pot plunged in the tan, and the other let into the wall of the pit, leaving only a brick on edge between the hot-water pipes and the cucumber pot; and let the cucumber vines be trained on a trellis over the back path, 16 in. from the glass.

The orchideous house will have, also, ferns and mosses on the back, and over the circular stand of conglomerated bricks in the centre; the stage around the front and ends will be cemented so as to hold water, in which pans will be placed, for the purpose of putting the orchideous pots upon them.

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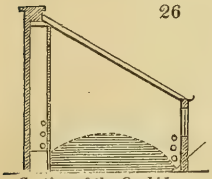
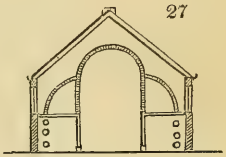


Section of the Orchideous House.

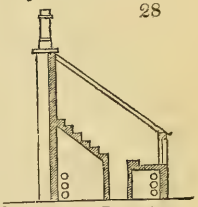
27



Section of the Peach House.

Of the peach houses nothing need be said, only that the trellises will be circular at the ends. The centre of the green-house will be supported by ten pillars, on which creepers and twiners may be trained. The plant stove will be for forcing flowers and propagating, as well as for stove plants. The pits and frames will have a dung lining between them.

28



Section of the Plant Stove.

The walks will be of stone, 4 ft. wide, raised 1 in. in the middle, with gratings in the gutters, 9 ft. apart. The roofs of all the houses will be supported on hollow cast-iron pillars; and all round the walks, on both sides, there will be 3½ ft. of lath and plaster, and 2½ ft. of upright glass, made to slide into the opaque part, after the manner of a coach window; and through this window every thing must be exhibited, as no guest is to be admitted into any of the houses. It will be observed, that the wall between the sheds and stoves will be lath and plaster; and that the hollow pillars around the walks will be in pairs: one will contain the window-sinkers, and the other conduct the water

from the gutters to the sewer. The pathway will be covered with lead or zinc, and have several ventilators in the roof. The rafters of all the houses will be of iron, and all the sashes of wood, with every lap of glass made air-tight. Every house shall contain a water-tank, built of bricks and cement, below the level of the floor, and be supplied from a leaden pipe, with a ball-cock.

Let no one imagine, by this arrangement, that I prefer having flowers in the kitchen-garden; on the contrary, I think the departments should always be separated where there is sufficient extent: but in the villa gardens near London, for which this paper is designed, structures for exotic plants are not unfrequently strewn about like the tents of a Turkish camp: here a vinery propping up the walls of a mansion, and there a house of flowering plants, in an obscure nook of the culinary department, with a border of lettuce in front.

Isleworth, Aug. 18. 1836.

ART. VII. *Notice of a remarkable Woodland District in Scotland, still in its natural State; comprising the Head of Strathspey, in Badenoch, and the Forest of Braemar.* By H. B.

HAVING read with much pleasure several of the articles in your late Numbers headed "Scottish Arboricultural Notices," I think it may not be unacceptable to your readers to send you a few particulars regarding a forest district, the only one of the kind now remaining of those impenetrable woods, which, in former days, proved such an impassable barrier to the Romans under Agricola; but which, I regret to say, have suffered so much, during these late years, from the axe, that in a very short period they will probably only form matter for history.

The district I allude to comprises the Head of Strathspey, in Badenoch, and that part of Deeside known as Braemar Forest. About three weeks ago, I determined to visit this district; and, having accompanied a friend up Athol to his shooting lodge, after remaining a few days there, visiting the noble larches at Dunkeld and Blair, and the Pass of Killiecrankie, and being charmed with the romantic scenery of Strathtay, we crossed over through Gaick Forest to Pitmain, in Strathspey, by Glentromie. Here nothing can equal the solemn still grandeur of the scenery, with the majestic red deer stalking solitarily through the glens. We at last approached the Spey at the Ford of Pitmain. The Spey is a very dark-coloured rapid river; and we made our henchman, or guide, go first, he being mounted on a taller pony than ours. He was presently afloat; and my friend got so much alarmed, that we drew up; and it was then only we became aware of the force of the water, as the ponies could not stand;

and we were compelled, with difficulty, to return, and ride six miles higher up to the Bridge of Spey. This part of Badenoch is bleak, with little wood, and that stunted birch. Lower down, you enter the woods of Invereishie and Rothiemurchus, which are of the *Pinus sylvestris*, or native pine. Nothing can exceed their beauty, measuring, in some instance, 17 ft. and 18 ft. in circumference, and the wood equal in cleanness to foreign. Great part of the Rothiemurchus woods have been cut, and floated down the Spey. As much as 14,000*l.* for wood, we were told, had been realised in a single year, while the ground rental of the estate rose not much above 1000*l.* We visited Kinrara, the wild and favourite residence of the celebrated Jane Duchess of Gordon; also the Doune of Rothiemurchus, the shooting box of the Duke of Bedford. From Avicenara we struck over, by Rothiemurchus, Cairngorm, and Ben Mac-dhui (the highest land in Britain by the last survey), to the head of the Dee; and we launched (in the middle of July) into a field of snow on the top of the pass, taking a copious draught of iced water flowing from

"Those rills which nurse the source of infant Dee."

The scenery here is as wild as any part of the Alps I had ever seen, and put me much in mind of les Aiguilles in the Valley of Chamouni. We had, within two days, seen the sources of three of the finest rivers in Scotland; viz. the Tay, the Spey, and the Dee, and all rising within a circuit of twenty miles. We then descended the deer forest of Braemar, the upper part of which is, in a manner, destitute of vegetation; rocks rising in the most precipitous manner, and all primitive granite, porphyry, and gneiss.

Shortly after passing one of Lord Caermarthen's keepers' lodges (who has taken the forest, and pays nearly 3000*l.* of rent), we entered the woods, which are entirely of *Pinus sylvestris*, and some finer than those of Rothiemurchus. One must come here to see the Scotch pine in its native grandeur. The average dimensions were as much as our guide and myself (both 6 ft. high) could span with arms joined. The clean vermilion colour of the bark, and darkness of the foliage, showed that this spot was their native soil. It was with regret that we saw, in many parts, the sawpit in full operation. The lower part of the trunk only is taken, and the rest left to rot on the ground, the Dee not being deep enough to float down wood.

The soil this forest grows upon is a light gravel: wherever the moss exists is without wood. It is about twenty miles long, and stocked wholly with from 7000 to 8000 red deer, no sheep or cattle being allowed to pasture in it. It is admirably adapted for a deer forest: the upper part, being entirely bare of wood,

forms the summer resort, and the lower the winter one. At the bottom of the forest is the Lynn of Dee, a boiling caldron of 100 yards or so in diameter; the Dee being confined within precipitous rocks, not above a step from bank to bank. Shortly after this you approach Mar Lodge, beautifully situated in a recess formed by the river, with a wooded hill above; and, shortly after this, the picturesque alpine village of Braemar, one side of which belongs to Lord Fife, with the Fife Arms inn; and the other, and more modern, to the Invercaulds, who have built a beautiful inn close to the spot where the unfortunate Earl of Mar hoisted his standard in 1715. The remains of Malcolm Canmore's shooting lodge is also shown here. You are now fairly in Deeside; and, as I have already diverged from my subject, of its beauties I shall not descant; merely remarking that I observed every where that the planted Scotch pine is, in every instance, a totally different tree from the plant which springs indigenously; and that a sight of Braemar Forest is well worth a visit of any arboriculturist, even from the more southern parts of the island.

Muirdrum, Dec. 27. 1836.

A very characteristic sketch of a group of Scotch pines was made for our *Arboretum Britannicum* by W. Nesfield, Esq., landscape-gardener, of which *fig.* 29. is an engraving, reduced to the scale of 1 in. to 50 ft. The highest of these trees is 75 ft.; and the diameter of the trunk, at 6 ft. from the ground, is 6 ft.

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Art. VIII. *On the Transplanting or Removal of Evergreen Shrubs.* By R. Glendinning.

The removal of evergreen shrubs is a very important consideration in ornamental gardening; and much, therefore, is due to your intelligent correspondent Mr. Rutger, in directing the attention of your readers to it, so as to resolve the proceeding into something other than a mere speculative operation.

The following hints are applied to the transplanting of large plants, as small ones may be removed at almost any season with nearly equal success. In the prosecution of some alterations, which have involved the planting of numerous large evergreens, and in considerable variety, immediate effect being desired, opportunities presented themselves of comparing extensively the result of the various seasons, and marking the effect of each. I may premise that an opinion, and not an erroneous one, is com-

monly entertained, that, should evergreen shrubs be removed during the months of November, December, January, and February, the effect will be nearly the same. Notwithstanding this, I am still, however, persuaded that there is a certain time better than any other for performing every operation, especially of gardening, the data for the fixing of which are found in the immutable laws of vegetable economy. The various scientific operations of the skilful horticulturist are guided by these axioms; and a knowledge of them, he is aware, is indispensable to the success of his performances. Hence, such an acquaintance with the physiology of plants points out to him the seasons of grafting and budding, the removal of shrubs, and every other operation which he has to perform; and enables him, also, to calculate with certainty on his success.

Having said thus much by the way of preliminary remark, I come now to what more immediately forms the subject of this paper; viz. the proper season at which evergreen shrubs should be transplanted, so as to sustain the least injury from their removal.

The period, then, of the greatest action in the economy of these shrubs is surely not the desirable time; neither can that be the most fitting season when they are in a comparatively torpid state. In the former instance, the plants will suffer from the natural season of excitement, which the more or less unavoidable mutilation of the roots will render them unfit to sustain; whereas, in the latter case, the fibrous roots will perish from the extended period during which the plants will be compelled to remain in a torpid condition. Well, then, a time between the two extremes (say during the month of April) may be suggested; but this would be a fatal suggestion, as at this season all vegetable life is, as it were, charged, like a voltaic battery, waiting the influence of a genial sun to discharge its accumulated provisions into leaves, flowers, and fruit. The branches must sympathise with the roots, which, at the three periods cited, ought not to be disquieted. It will be perceptible, from the preceding observations, that there is yet another season at which the proceedings of the skilful and cautious may be rendered successful; and the guide for discovering this period is a very simple one. The time I propose shall be alike free from the extremes of either present or immediate prospective excitement, and shall yet not be the season of maximum transpiration. It is a well-known and understood fact, as well as a matter of common practice, that the successful propagation of a great number of evergreen shrubs is prosperously effected at the time the young shoots have attained a firmness of texture, easily distinguished by the practical operator. We may instance the laurel, camellia, &c., which will have arrived at this condition about

the end of August. These cuttings then contain abundance of the active circulating fluid, which, in its downward course, forms a callosity which presently emits roots. It is this time, during the declining year, which I have found the most desirable season to conduct the operation of transplanting evergreen shrubs. I have thus laid down a general rule for removing evergreens familiar to every body, and mentioned a law upon which it is founded, which is within the comprehension of all. The young shoots, at this season, will have attained sufficient maturity to render their suffering from removal, or from the aridity of the season, very trifling; as the whole plant will contain enough of the active sap to propel fresh spongioles when located; so that, after a copious watering, the general appearance of the plant will have sustained little change.

The preceding statement may be rather loose; still, my recommendation is founded on some degree of reason, as in practice it has proved successful. Should you select it as worthy of a place in your Magazine, I may just add that, if it does not render the contending, and apparently somewhat anomalous, opinions held on this subject reducible into one regular and rational mode of proceeding, it may, at least, have a tendency to that end; and it is to be desired, also, that any further discussions on a subject so important as the one under review may be conducted in a spirit anxious only to establish gardening operations on philosophical principles, apart from the tone of vindictive acrimony too frequently adopted in similar investigations.

Bicton, near Exeter, Dec. 1836.

ART. IX. *Notice respecting the State of a Plantation of* Sàlix álba, *of which some Account was given, in* 1825, *in this Magazine.* By ARCHIBALD GORRIE, F.H.S., M.C.H.S.

IN the First Volume of your valuable Magazine is an account from me of the progress made by the Huntingdon willow on gravelly soil, by the side of a rivulet, at the bottom of Rait Hill, up to the period of writing (Dec. 6. 1825); being fourteen years from the time of planting. On referring to that communication (Vol. I. p. 46.), I find that several of the trees measured 46 in. in circumference at 4 ft. from the ground; and that their average height was from 55 ft. to 60 ft. On receiving your request to give an account of their present state, I took Mr. Tyrie, a carpenter, with me, and measured several of those formerly measured; and found that ten years' growth has added considerably to their girt. Not having referred to my former paper, the measurement was taken at this time at 1 ft. from the ground; and the following is a copy of Mr. Tyrie's notes: —

One tree measures in circumference 71½ in.; two trees, 68 in.; and one tree, 67 in. The average of those near the rivulet is from 62 in. to 68 in.; but those farther from the stream are smaller. The measurable solid wood, above 6 in. in diameter, is 30 solid feet on two of the largest; and other two measured 25 solid feet. Two have lately been blown over by the wind, which stood without the reach of the stream, and which measured 76 ft. in length: the tallest measured about 80 ft. in length. On cutting up the wood in deals, it has a beautifully waved bird's-eye appearance, and acquires a smooth glossy surface. The trees have now stood twenty-four years; and one of the largest measures within a fraction of 1 in. in diameter for every year it has stood; and now the accumulation of solid wood is yearly increasing in proportion to the extent of the circumference. The solid wood of the largest measures 1 ft. 3 in. for every year it has been in the ground. Upon the whole, I continue of opinion that few trees can come in competition with the *S*àlix álba for rapidity of growth, elegance of appearance, and value as timber. Those who have the First Volume of your Magazine will be kind enough to correct an error in p. 45., line 11. from bottom, and write with a pen, "*bulk*," in place of "*bark* for fuel."

Annat Garden, Oct. 11. 1836.

ART. X. *Results of an Attempt to grow some tender Aquatics in hot Water, in the open Air.* By RICHARD CHRISTIE, in a Letter to W. Christie, jun. Communicated by the latter; with Remarks.

IN reply to your request that I would send you some account of the plants grown here last spring, I must first premise that they were intended for an attempt at cultivating them in the hot-water reservoirs in the garden attached to the factory. The water used for condensing in the engine-house soon becomes very hot; and, in order to cool it for subsequent use, it is conducted about the garden in shallow stone gutters, and from them into several large reservoirs, 6 ft. or 7 ft. deep. The temperature of the reservoir in which the plants were placed has varied considerably during the summer, as I will notice hereafter. The plants, consisting of three small roots of *N*ymphæ`a cærùlea, several of Limnócharis Humbóldt*ii*, and a very small one of Pontedèr*ia* azùrea *Bot. Mag.* (P. crássipes *Hort.*), arrived about May 8. The Pontedèr*ia* having been lost almost immediately, I shall take no farther notice of it, but confine my remarks to the *N*ymphæ`a and Limnócharis. Two plants of the former, and one of the latter, I merely threw in with the roots enclosed in a ball of clay to sink them: the others were sunk in two small baskets filled with clay. The reservoir being puddled with clay at the bottom, the roots, in

either case, soon reached it, and established themselves. On being first placed there, they did not grow at all for some weeks; but on my return, after several weeks' absence, I found them beginning to grow; and, about the middle of June, one of the limnocharises flowered. In the beginning of July, there were five or six flowers out in a day, and they kept on increasing. Two plants of the *Nymphæ`a* came on very well, and, about the middle of July, each plant put out two flowers. The weather was excessively cold; but they managed to stand it, and opened pretty well. One plant seemed stronger than the other; and its flowers, when fully expanded, measured more than 3 in. across; the other about $2\frac{1}{2}$ in. The leaves of the former are 7 in., 8 in., and even 9 in., long; but those of the second, although the plant appears very healthy, are not above from 3 in. to 5 in. in length. One plant of the *Nymphæ`a* has never altered since it was put in. The one which has flowered the best has never had more than a dozen leaves up at a time. Early in August, I took up a basket containing several plants of Limnócharis and the smaller *Nymphæ`a*, and sent them over to Poynton (Lord Vernon's collieries, near Stockport). I enquired about them the other day, and found they were doing well; but I intend to ride over, and get further particulars. When I left here for Jersey (Aug. 5.), the Limnócharis covered 4 or 5 square yards; but on my return on Sept. 19., I found at least 60 yards covered; and, without exaggeration (from actual counting), 500 flowers out in a day. They are now increasing at such an inordinate rate, and sometimes choking the pipes, that I gave orders to have all within reach at the sides raked off; though there is still plenty left in 6 or 7 feet water out of reach. I found, also, that the largest *Nymphæ`a* had flowered again during my absence, and had still one unexpanded bud just above water. This opened better than those in July, the weather being warmer. The flowers of the *Nymphæ`a* lasted several days: in our stove, I think, they only lasted one.

With regard to temperature; for nearly two months after the plants were placed in the reservoirs, the heat of the water varied at the surface from 60° to 100°, and sometimes appeared uncomfortably hot for the plants; but an alteration having been made in the conducting troughs, which cooled the water 15° to 20°, they appeared to thrive better.

It was just after this that the *Nymphæ`a* first flowered, though the Limnócharis had commenced long before. I am sure I am correct in saying that, during the first flowering of this latter plant, the water at the surface was little short of 100°, and at the bottom 80°. I ascertained this by putting a thermometer down at the end of a long stick, and drawing it up so quickly, that it had not time to rise. The temperature since the alterations, I think, has never been above 80° at the surface, and 65° to 70° at

the bottom; and I have no doubt that on Sunday nights (when the engine has not been working for 24 hours) the water must be almost cold, as in the afternoon I have found it scarcely half so warm as new milk.

The Limnócharis has put some buds above water to-day; but I doubt if they will expand; the ground being covered with snow and the air bitterly cold. I had forgotten the cannas.* They have certainly grown, but do not seem to succeed here, and are this morning covered with snow, which will pretty well finish them.

It is my opinion, that low-growing plants succeed best in this way, because, if they do not grow above 4 in. from the surface of the water, the steam will keep them warm. Although we have merely tried these two plants, only one of which is properly a stove species, I think enough has been done to show how easily we may cultivate such species as, under other circumstances, are neglected in our collections, from the high temperature and large space they require. R. C.

Stockport, Cheshire, Oct. 29, 1836.

I CANNOT entirely agree with the opinion expressed above, as to growing only small aquatics in the water. The garden where the above experiment was tried is close to a very smoky town, and very much exposed, being open to the north-east; while the cannas were only seedlings of the present year. But, in a more sheltered situation, I am persuaded we might cultivate, during summer, not only most species of *Cánna*, but also of *Bambùsa*, *Papỳrus*, *Calàdium*, &c. &c. But, even supposing we can only grow such plants as float on the surface of the water, or rise but little above it, surely these are sufficiently beautiful and interesting. What a fine object would be presented by a large sheet of water adorned with the flowers of *Nymphæ`a cærùlea, rùbra, ròsea*, pubéscens, and *Lòtus*!

Who knows, too, but that the splendid *Nelúmbium* speciòsum and lùteum, so often lost in our collections, would succeed better under this treatment; while, certainly, the magnificent-leaved *Eurỳale fèrox* would here find that room which, although requisite to its perfection, it so seldom meets with in our stoves. Many of the opulent manufacturers of Lancashire have fine gardens, and rich collections of plants; and I much wish to call their attention to the above mode of growing tender aquatics.

* *C.* fláccida and coccínea, sent in September, and planted in the border, at the edge of the reservoir, where the hot water finds its way, through the upper courses of masonry, into the adjacent soil. Asparagus beds in the same situation are very prolific, the plants extending their roots through the crevices of the brickwork into the water, and producing abundant crops very early in the year. — *W. C.*

Many of them, doubtless, possess reservoirs similar to those above described; and any one, who would go to the expense of covering one of these with a suitable glazed house, might form an unrivalled collection of stove aquatics. The moisture of atmosphere induced by the exhalation from the water would be peculiarly congenial to the growth of ferns, which might be placed on artificial rocks round the basin. Many of the hardier epiphytes could be suspended in various parts, and the house further adorned by some of the most showy species of Passiflòra, a genus delighting to grow in the neighbourhood of water. Let us hope that the above imperfect experiments, and sketch of what *might* be done, may be worked out on a large scale, by some of your readers who are possessed of greater facilities for so doing.

Clapham Road, Nov. 4. 1836. W. C., jun.

ART. XI. *On the Culture of Cape Heaths.* By R. GLENDINNING, Gardener to Lord Rolle.

THE *Erìca*, among exotics, has always been one of our first favourites, and most deservedly so, on account of its comparative hardiness and frequently successful propagation, as well as from the numberless variety of colours, of forms, and of habits, which are embodied in the genus.

It is a general complaint about London, and which, also, I believe, prevails among the many in the country who are fortunate in cultivating and flowering small plants, that, with all their efforts and attention, they have not completely succeeded in growing large specimens.

Mr. M'Nab, as far as I know, was the first to direct the public attention to a pretty successful plan of preserving the Cape heaths, with the luxuriance of youth, to a good old age. The noble specimens which I saw at the Edinburgh Botanic Garden do more than entitle Mr. M'Nab's *Treatise* to be read: indeed, in Devonshire, it has been variously acted upon, and with considerable success; but most conspicuously so by Lucombe and Pince of the Exeter Nursery, who grow all the rarest kinds in wonderful luxuriance. Independently, however, of the success which has attended Mr. M'Nab's mode, I have been informed by cultivators of these plants, both in this county and in the vicinity of London, that, after having flattered themselves of the entirety of this system, when some of the more choice and delicate kinds were in the apparent zenith of health, they have suddenly gone off, and this, too, after years of prosperous culture. Those with whom I have conversed regarding this unexpected and signal failure concurred in attributing it to the completely desiccated condition in which a great portion of the under part

of the ball was found, while the surface retained a superabundance of moisture. A uniform temperament of the whole mass of materials in the pot is the desideratum sought after, and which, by the introduction of pieces of stone into the soil, as recommended by Mr. M'Nab, was effected to some extent. Still, after a continuation of dry weather, when frequent watering became necessary, I found even then, on examination, the bottom and centre part of the ball to be sufficiently dry to account for the seemingly inexplicable failure of the plants. To overcome this, and to equalise the temperament of the material used, the idea suggested itself of employing something of a more retentive nature than bog-earth, sand, and broken stones; and recourse was had to the following compost: — Equal quantities of the knobs of turfy loam, turfy peat, pieces of broken freestone, and chopped moss, mixed together; and this, in potting, will form the centre. Moss only is used to cover the drainage. The surface and sides are of that soil usually recommended in cultivating the *Erica*. During the extreme aridity of the bygone season, I made a point of frequently examining the balls of some plants thus treated, which, on comparison, I found most satisfactory, and in such a state as fully justifies me in sending you this communication.

Bicton, near Exeter, Nov. 2. 1836.

ART. XII. *On the Culture of Chrysanthemums.* By JAMES CUTHILL.

CHRYSANTHEMUMS have long been considered a great ornament to the conservatory; and their beautiful blossoms are frequently brought to great perfection, though we never see what may be considered as a handsome plant; and we never shall, till the old system of growing the plants in pots the whole year round is done away with. I have given my plan two years' trial; and can, with confidence, recommend it as a great and decided improvement. In the month of April, I take as many suckers of each sort as are wanting, and I plant them out, in good prepared ground, about 2 ft. apart. As soon as they begin to grow I top them, and continue doing so with each succeeding growth, until they begin to assume a shrubby appearance; not staking them, but allowing them to grow at pleasure. If a succession of plants is wanting to blossom very late, or rather in the commencement of the year, I keep topping a few on purpose; and, in dry weather, I water them, from a pump I have got fixed in our new melon ground, with the drainings of all the manure: this is the very essence, and no gardener should lose it. On the 1st of September, I pot my late chrysanthemums into thirty-twos, and start them, by putting

them into a close house for about seven days, until they have made young roots; not allowing the sun to shine upon them, and syringing them twice a day. Our chrysanthemums, this season, are very fine; the plants that stand in front of our conservatory had scarcely lost a leaf on the 5th of December, and about forty of them had not opened all their flowers.

Dyrham Park Gardens, Dec. 1836.

ART. XIII. *On the Culture of Asparagus.* By A. FORSYTH.

THERE is, perhaps, no article in the culture of which more unnecessary forms are gone through than with this. We see the plant (a native of Britain) covered with 6 in., or perhaps 1 ft., of soil or litter, in winter, to keep the frost from it, or to mulch it when it is in a dormant state; though we may as well mulch a layer of seed potatoes at Michaelmas, to benefit their buds for the succeeding summer.

But to come to the point, and that is, to cultivate asparagus to the highest state of perfection at the lowest charges. Let a heap of manure, equal to a layer of 9 in. deep all over the ground intended for asparagus, be prepared of the following materials: — One third good loamy turf, or turf of sandy peat; and two thirds of the best dung from the stables and cattle layers; with about two bushels of drill bones to every pole of ground. The turf ought to be pared off, and piled up, a year previous to its being wanted; and the dung properly mixed and fermented at least six weeks before. The bone manure may be spread over the rest before they are trenched into the quarter. In the process of trenching, let the manure be equally incorporated with every part. In planting, let one-year-old plants be inserted 1 in. below the level of the surface, in lines alternately 9 in. and 3 ft. apart, in the same way as peas are generally planted. If the plot be extensive, paths, $3\frac{1}{2}$ ft. wide, may be run across the rows, at the distance of 16 ft. apart, to prevent wheeling, and, as much as possible, walking, between the lines. The plants may be from 4 in. to 6 in. apart in the row, bedded and covered with leaf-soil, or dung reduced to a soil; and, as mulching with half-rotten dung, and extensive waterings in dry weather, are the principal features of culture, it is indispensably necessary that the ground be effectually drained, summer drought and winter saturation being the grand evils to be guarded against. From the latter end of May till Michaelmas is the time that asparagus is generally left without any culture, except routine weeding, &c. Now, this is almost the only season that any culture can be of much service to the plant; for it is evident, that, if we encourage the plants whilst they are in a state of active developement, that

is, when they are shooting up to seed, by forking, frequent hoeing, mulching, and watering between the rows, as if flowers and seed were all we wanted, we shall invigorate the plants, and enable them to form fine plump crowns for next season: but I cannot see how banking the beds up with soil, or mulching them with strawy litter before winter (the roots being then in a state of rest), can be of any great service to the plants. A short time before the buds appear in spring, a little fine soil may be drawn over the crowns, in order to blanch the lower halves of the buds.

In cutting, let the earth be first scraped away from the bud, that the gatherer may see where and what he is about to cut. Two or three years must elapse, after planting, before any buds can be profitably gathered for use; after which term, the lines may be allowed to remain until they become straggling and unproductive. In most gardens, however, they are generally wanted for forcing after six or seven years' bearing; in which case only a very slight hot-bed is necessary (say 80° bottom heat), with 2 in. or 3 in. of any soil under and about the roots; and 5 in. or 6 in. of old tan, or any light soil, over them: atmospheric temperature about 55°.

Roots, placed between two layers of soil in pots or boxes, may be introduced into any early forcing-house at work; or trenches may be cut between the lines in the open ground, and hot dung or leaves introduced under hoops and mats. Beds for forcing asparagus, with trenches between cased with brickwork, I consider as expensive and unprofitable.

Isleworth, Dec. 14. 1836.

ART. XIV. *An economical Substitute for Hand-Glasses in Gardening.* By N. M. T.

HAVING always had the misfortune to live where there was a scarcity of hand-glasses, to obviate this defect I have lately grown my cauliflower plants in pots. I do not adopt the commonplace plan of stuffing the roots into a pot, and leaving the head out. I do the very reverse of this: I put the head in, and leave the roots out. But a description of my present plantation will develope the whole system. The cauliflowers are planted in rows across a 10 ft. border, 3 ft. between the rows, and six plants in a row. After they are planted, I provide a flower-pot (32.) for each plant, introducing it through the hole (1 in. in diameter) in the bottom of the pot. The pot is then firmly pressed down, earthed up about half way outside, to prevent its being upset, and the operation is completed. When protection becomes necessary, I provide a board, 9 ft. long and

7 in. wide, for each row. These can be laid on the line of pots, by a person at each end, as fast as they can walk, and without setting a foot on the border. When the plants begin to look over the pots, the boards can no longer be used as a covering: they are then laid between the rows, to walk upon. The pots are earthed level with the brim outside, and as much mould put in them as the state of the plants will admit. A pot, a size larger than those plunged, is then placed beside each, and inverted over it when the plant requires shelter. When no longer wanted, the covers are removed, and the plants earthed up as they require it. The pots they grow in are, consequently, soon buried, where they remain till the cauliflowers are cut: they are then dug up, and laid aside for further use. The advantages of this simple plan are numerous; the economy is self-evident; the appearance neat and orderly, entirely doing away with the lumpish unnatural growths the plants exhibit when grown in hand-glasses. Here each plant, forming the centre of its own little world, is left to luxuriate in single blessedness, safely guarded from its enemy the slug: the worms cannot even pull a leaf under ground. Notwithstanding all these advantages, I do not expect to be much patronised by gardeners, since I fear my brethren of the spade "are a stiff-necked and rebellious race." It is to the "cottage homes of England" that I look for support; and proud indeed shall I be if I can introduce an additional comfort there. Many of their inmates, who cannot spare 10*s.*, 12*s.*, or 15*s.*, for a hand-glass, would buy a cast of my pots, and enjoy through them a luxury at a season when it is confined to the tables of the rich.

London, Dec. 1836.

ART. XV. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., and Frederick Westcott, Esq.,

Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

RANUNCULA'CEÆ.

1159. *DELPHI'NIUM* [Fl. Græc., 6. t. 505.; Swt. fl-gard. n. s. t. 366.
*tenuissimum *Sibth.* slenderest-*branched* ○ or 1 au P Greece 1835 S r.m Sibth. et Sm.
Synonyme: D. divaricàtum *Ledeb.* in *Fisch. et Mey. Ind. Sem. Hort. Imper. Petrop.*, 1835, p. 7.; and *Flor. Cab.*, No. 16.

A very distinct and delicate annual species of larkspur, which perfects its seeds freely in the open border. (*Br. Fl.-Gard.*, Jan.)

Balsaminàceæ § Tropæòleæ.

1148. TROPÆ'OLUM
†29307 brachyceras *Hook.* short-spurred ⅄ ⊥△ p.r 12 au Y Chili C l.p Bot. reg. t. 1926.

"A beautiful little Tropæ'olum, forming the prettiest possible match for T. trícolor, whose habit it possesses, with a substitution of clear delicate yellow in the petals for the rich crimson of that species. Like it, the present species is not uncommon about Valparaiso, in bushy places in the mountains. The Chilians call it *Flor de Perdiz*. It is not a little singular that our gardens should still be without the other tropæolums that grow wild near Valparaiso. Weeds enough, including common lucern, and the corn plants that were carried out from Spain, have been sent home; while some of the most interesting parts of the Chilian flora remain neglected. For instance, it was only the other day that the first species of Chloræ'a, of which there are probably 20 in Chili, reached England, through Capt. James Mangles; and of the genus before us we are still without T. polyphýllum, whose flowers grow in heads as large as the fist; and T. azùreum, which, to the herbage of T. trícolor, adds the colour of the deep blue of a Siberian larkspur." (*Bot. Reg.*, Jan.)

Rosàceæ.

1522. *RO'SA* 13493 sínica *Ait.*; Arb. Brit., No. 75. p. 776.
Synonymes: R. trifoliàta *Bosc*; *R.* ternàta *Poir.*; *R.* cherokeénsis *Donn*; *R.* nívea *Dec. Hort. Monsp. Prod.*, 2. p. 599.; *R.* hýstrix *Lindl. Monog.*; *R.* lævigàta *Michx. Fl. Bor. Amer.*

"A very common rose in the gardens of Italy and the south of France, where it is highly ornamental, from the profusion of its snow-white flowe rs, and the handsome shining appearance of its evergreen leaves. It is less suited to this climate, in consequence of being rather tender; but it flowers beautifully in the climate of London, when trained to a south wall. It is a native of China, where it appears to be the common dog rose of the country. Now that the races of cultivated roses have become so much improved by hybrid intermixture, it is well worth ascertaining how far this is suited to alter the foliage and size of blossoms of some of the other Chinese species. What would be most to be feared is, that its delicate constitution should be communicated to its offspring: but this might be avoided by mixing it with some very hardy species, and then using the variety so obtained as the subject of a second intermixture. There is so much beauty in the foliage, and such remarkable firmness, combined with delicacy, in the petals of *R.* sínica, as to make it highly deserving of a trial." (*Bot. Reg.*, Jan.)

Onagràceæ.

1183. *ŒNOTHE'RA* 10021 fruticòsa.
2 ambígua *Hook.* ambiguous ⅄ △ or 1 jl Y N. America 1813 D co Bot. mag. 3545.
Synonymes: Œnothèra ambígua *Spreng. Syst. Veg., Dec. Prod.*; Œnothèra canadénsis *Gold.* in *Edin. Phil. Journ., Dec. Prod.*

"Œnothèra fruticòsa is a species widely extended throughout North America, from Canada to Carolina; but so variable in its foliage and hairiness, as to have suggested the idea of the species;" *Œ.* ambígua *Spreng.* and *Dec.*; *Œ.* canadénsis *Gold.* and *Dec.*; *Œ.* serótina *Swt.* and *Lindl.*; *Œ.* incàna *Nutt., Dec.*, and *Torrey*; *Œ.* Fràseri Pursh; and, in all probability, *Œ.* lineàris *Michx.*; being nothing more than varieties. (*Bot. Mag.*, Jan.)

Saxifragàceæ.

805. HEU'CHERA [t. 1924.
*cylindràcea *Lindl.* cylindrical-*panicled* ⅄ △ el 2 my G N. America 183- D l.p Bot. reg.

A hardy herbaceous plant, found by Douglas near the Kettle Falls, in dry mountain woods, in the north-west part of North America. "Saxifragaceous plants are generally described as destitute of stipules: those organs are, however, visible enough in the genus Heùchera." (*Bot. Reg.*, Jan.)

Asteràceæ, or Compósitæ.

2331. *MA'DIA* 29889 élegans *Bot. Mag.*, t. 3548.
Synonyme: Madària (*madaros*, bald; the achenia) élegans *Dec. Prod.*, 5. p. 692.

A well-known, favourite, hardy annual, clothed with the same clammy and fetid pubescence as the common *Màdia* viscòsa (satìva *Dec.*) of Chili; but, instead of having very small and imperfect rays, as in that species, they are developed and spreading, so as to give a totally different appearance to the plant. (*Bot. Mag.*, Jan.)

Scrophulariàceæ.

65. CALCEOLA'RIA [Floral Cabinet, No. 17.
*mirâbilis *Knowles & Westcott* admirable ⅋ ⌴ s.p.l 2 ... P Eng. hyb. 1834 D r.m
Intermediate between C. péndula and C. insígnis.

"This splendid hybrid excels in richness of colour most of the varieties of this favourite genus that have hitherto come under our observation. Our drawing was made from a plant in the collection of J. Willmore, Esq., of Oldford. It was raised in 1834, by Mr. Skirving of the Walton Nursery, near Liverpool, who informs us that it was obtained from C. péndula, impregnated with C. insígnis; and that the specimen plant grown in the Walton Nursery this year (1836) displayed at one time upwards of 800 blooms, and continued in full flower upwards of three months. Such a plant may justly claim the specific name which it has received." (*Floral Cabinet*, Jan.)

Verbenàceæ.

1749. *V*ERBE'NA 15641 Aublèt*ia*
2 Drummónd*i* Lindl. Drummond's ⅄ △ or 1½ jl L Texas ... D co Bot. reg. t. 1925.
Synonyme: V. Drummónd*ii* Hort.

"The *V*erbèna Lambért*i* var. *r*òsea of the *Brit. Fl.-Gard.*, stated to have been found by Mr. Drummond in Texas, seems a different plant from this; and, if so, there are two sorts of *V.* Drummónd*i* in the gardens. (*Bot. Reg.*, Jan.)

Orchidàceæ § Malaxídeæ.

2539. PLEURÓTHA'LLIS [Floral Cabinet, No. 19.
*ciliàta *Knowles & Westcott* ciliated-*petaled* ⅋ ⍓ cu ½ ... Br Demerara 1834 D p.r.w

"This species of Pleurothállis is perfectly new to this country." It was received by J. Willmore, Esq., of Oldford, "in 1834, from Mr. Henchman, who collected it near the Falls of Ouripano, on the Masseroni river, Demerara. It was found attached by its long fibrous roots to the main stems of large trees, in company with P. pícta, P. Gròby*i*, and others not yet described. The flowers, though minute, are elegant in form, and pleasing in colour." (*Floral Cabinet*, Jan.)

Orchidàceæ § Vándeæ.

2521*a*. *BURLINGTO'N*IA* Lindl. Burlingtonia. (*Countess of Burlington.*) *Orchidàceæ. Sp.* 1—5.
*cándida *Lindl. snow*-white ⅋ ⍓ de 1 ap W Demerara 1834 D p.r.w Bot. reg. t. 1927.

This species "does not stand alone in solitary beauty, but it belongs to a little family, at present consisting of five, each of which vies with the other in loveliness. One of them, B. venústa, a native of Brasil, may be literally said to sink beneath its long heavy clusters of snow-white blossoms, just tinged with pink; a second, seated upon the highest branches of the cedrela tree, perfumes the forests of the same country with the odour of jonquils (it is B. fràgrans); while a third, B. rubéscens, delicately spotted with rose colour, inhabits the trunks of the calabash tree, in the mission of Yurimazuas, in the province of Maynas, the hottest part of Peru, and is loaded with blossoms all the year long; and the fourth, B. rígida, with many peculiarities, breathes the delicious fragrance of the violet." (*Bot. Reg.*, Jan.)

*TRIGONI'DIUM *Lindl.* TRIGONIDIUM. (From *trigōnon*, a triangle, and *eidos*, like; "in allusion to the triangular form of several parts; the sepals form a 3-cornered cup, the gland on which the pollen masses rest is an obtuse-angled triangle; and the stigma is a triangular excavation.) *Orchidàceæ. Sp.* 1, 2. [t. 1923.

*obtùsum *Lindl.* blunt-*petaled* ℰ △ pr 1 au W.R Demerara 1834 D p.r.w Bot. reg.

Mr. Bateman received this singular plant through his collector, Mr. Colley, from Demerara, in 1834. The entire plant, at the time of its importation, consisted only of two pseudo-bulbs, which grow slowly; and, in consequence, it has not yet been increased. (*Bot. Reg.*, Jan.)

Iridàceæ.

145. *SISYRI'NCHIUM*

*speciòsum *Hook.* showy ℰ ↓△ or 1 jn B Chili 1836 D co Bot. mag. 3544.

Bulbs of this very handsome plant were imported by Mr. Toward, gardener to the Duchess of Gloucester at Bagshot Park, and by him communicated to the Glasgow Botanic Garden, where they flowered in June, we presume in the stove. (*Bot. Mag.*, Jan.)

*Amaryllid*àceæ.

*HIPPEA'STRUM *Hook.* KNIGHT'S STAR. (From *hippeus*, a knight, and *astron*, a star.)

*ambíguum *Hook.* *var. 1. longiflòrum *Hook.* long-flowered ☿ △ or ... ... W.R Valley of [Lima 1836 O r.m Bot. mag. 3542.

Bulbs of this plant were received from Lima, and they have flowered magnificently in the Glasgow Botanic Garden; whether in the open air, or under glass, is not stated, but we presume in the latter case. "The inflorescence is remarkably like that of the mules obtained by the admixture of H. solandræflòrum with H. reginæ-vittàtum, crossed again with H. vittàtum. The beard is fainter than in H. vittàtum, and the plant occupies an intermediate situation between this species and H. solandræflòrum. Whether it is a garden production at Lima, or exhibits a natural local variation of the genus, we have no means of ascertaining." (*Bot. Mag.*, Jan.)

Liliàceæ.

1016. *LI'LIUM*

peregrínum *Mill.*, Swt. Fl.-Gard. n. s. t. 367.

Synonymes: L. cándidum var. *L.*, Hort. Brit. no. 8392.; *L.* byzantìnum, *Swert. Floril.* t. 45.

An old inhabitant of the Dutch gardens, and common in those of London in Miller's time; but subsequently lost, and now imported from the Cape of Good Hope, where it had been most probably introduced by some of the Dutch colonists. (*Br. Fl.-Gard.*, Jan.) To us it appears only a variety of *L.* cándidum, and one by no means so handsome as the species.

Liliàceæ § Scilleæ.

3283. TRITELEI'A

*unifìora *Lindl.* one-flowered ☿ △ el 1 jn B Buenos Ayres 1836 O p.l Bot. reg. t. 1921.

"Rather a pretty bulbous plant, native of Mendoza, where it was originally found by Dr. Gillies. Its flowers have a delicate sky-blue tinge; but, unfortunately, the plant smells powerfully of garlic. It will be easily cultivated in a frame, or even in an open border, kept dry in winter. The manner in which the anthers are attached to the filament, and the sessile ovary of this species, are at variance with the characters of the genuine triteleias; but, in the absence of any additional species, it will be most advisable to leave it undisturbed in the genus where it at present stands." (*Bot. Reg.*, Jan.)

Liliàceæ § Anthericeæ.

1026. TULBA'GHIA

‡Ludwigìana Harvey Ludwig's ☿ ↓△ or 2 o G C.G.H ... O r.m Bot. mag. t. 3547.

In many characters this species approaches T. *alliàcea*. It is not yet introduced; but, there can be no doubt, plants will soon be obtained from Baron Ludwig, a well-known patron of botany. (*Bot. Mag.*, Jan.)

*Commelin*àceæ.

1000. TRADESCA'NTIA

8199*a* *caricifòlia *Hook.* Sedge-leaved ♃ △ or 1 au.s B Texas 1835 D r.m ?Bot. mag. 3546.

"Allied to the common garden spiderwort (T. virgínica); differing, however, in its much smaller size, slenderer habit, much narrower leaves and

bracteas, and in the entire freedom from hairs of every part of the surface of the plant, the margins of the sheath alone being ciliated." It is a native of Texas, where it was found by Mr. Drummond. In the Glasgow Botanic Garden, it flowered in August and September, under a cool frame. (*Bot. Mag.*, Jan.)

MISCELLANEOUS INTELLIGENCE.

Art. I. *Foreign Notices.*

FRANCE.

The exotic Trees blown down in the Park at Versailles are not very numerous ; because some of the largest trees in that park are deciduous cypresses, and these are among the most powerful of all trees for resisting storms of wind. A good many white poplars and elms have been blown down, and some lime trees; but, on the whole, I believe the damage in France has been less than in England ; because, the truth is, we have few old trees of any kind. — *J. B. Paris, Dec.* 21. 1836.

Singular Phenomena in the Vegetation of Trees. — More than a month ago, the trees of the public walks and gardens in and about Paris had ripened their wood and lost all their leaves; but they have now budded afresh, and are covered with a fine green velvety foliage like that of spring. (*Hermès*, Nov. 19. 1836.)

A Lime Tree in Lorraine, in a village near Salins, is supposed to be 800 years old. It is 10 ft. high from the ground to the commencement of the branches, by 35 ft. in circumference. Its trunk is hollow, and a door has been cut in it, by which means eight people have dined within it, seated at a round table. (*Hermès.*)

Parish Libraries. — The Minister of Public Instruction is at present occupied with measures the result of which will be the establishment of a small library, not only in every town, but in every village, in France. (*Hermès*, Nov. 26. 1836.)

BELGIUM.

Ghent, Dec. 1831. — Our new *local* for the exhibition of plants is now completed, and, I believe, will be capable of containing 8000 plants. The building itself consists of a *café*, an exhibition-room, and concert and ball-rooms; to all of which members of our Society are admitted. On the 10th of next March our first exhibition will take place, when upwards of fifty prizes will be distributed ; and, it being the first exhibition in our new building, it will be very grand. Most of the prizes are open to all the world ; and there will be a splendid banquet. The Brussels Botanic Garden is now under the direction of M. Van Houtte, who has lately returned from Brazil; and, the funds not being very well supplied for the carrying on of the establishment, a kind of flower bazaar is established in the houses for the sale of plants. Of this the gardeners in the neighbourhood complain, and with reason : nevertheless, unless such were the case, the establishment would run the risk of being ruined; for the municipality of Brussels is too much in debt to be more liberal, and the government will not advance a sufficient sum of money. At Ghent, we have got M. Donkelaar for our director and gardener in chief. The garden is much improved ; and the town has built a new span-roofed propagating-house, to be heated with hot water, much too large for the garden ; but, as only about 50*l.* is allowed to the head gardener, I believe it is intended to permit M. Donkelaar to sell, for his own profit, such plants as he himself propagates, provided specimens of each plant are kept for the botanic establishment. This is, certainly, better than being without a botanic establishment, but, at the same time, gives poor encouragement to the commercial gardener, who, at Ghent and still more at Brussels, has the govern-

ment selling in opposition to him. At Brussels, the range of houses is superb in point of architecture; but, from want of funds, the garden is, in many respects, much inferior to the establishment of a commercial gardener. At Ghent the collection is better, having still many rare plants, which Sieboldt sent over; but neither the funds allowed are sufficient to carry on the establishment with *éclat*, nor is the situation such as to enable the director to cultivate plants of any rarity in the open ground; the establishment being placed in the centre of the town, and so low that, in winter, it more resembles a badly drained marsh than a botanic garden. Ghent, nevertheless, is, at this moment, very prosperous in the gardening way; and is daily receiving new plants from England, and distributing them to all parts of Europe. New houses are erecting every where; and, though there are, at least, one hundred commercial gardeners within the walls, yet new ones are continually setting up in business. So much are flowers esteemed, that this autumn considerable robberies of plants have taken place; and, in one instance, by a confidential workman, to a large amount. I am sorry to add that the receivers of many of the stolen plants rank amongst the gentry of the place, who were not ashamed to pay an inferior price for them to a workman, though they must have known that the said workman had no right to sell his master's plants. As every one here has a great taste for flowers, plants are as good as money; and, I am sorry to say, there are persons who do not hesitate to corrupt the uneducated workmen, by giving them a slight recompence on condition that they provide them with plants. I believe I could trust the greatest thief in Belgium to walk in my garden, and a flower would not be touched, or the least mischief done to my plants; but, once his back turned, and out of the garden, he would to a certainty try to corrupt my gardener, or plan a way to enter it during the night. During the time I have lived in this country, I have never known a flower to be taken by any visitor who has paid my garden a visit; and, during the dahlia and geranium seasons, I have many hundreds, of *all* kinds of people, who request to see my collections; and, though it is impossible for me or my gardeners to attend to every one, yet not even a leaf has been taken without permission, nor the least mischief done. Whatever thefts are committed are generally done by your confidential workmen, who, knowing the value of plants, cannot resist the temptation. They are without education; and even those who have a smattering of learning are often the worst. They are not readers, but spend all their evenings in the *cabarets*, where they are sure to meet with too many temptations to be resisted; and many, moreover, think that, so long as they do not steal money, they may make free with their master's goods as much as they think fit.

It will require many years before a reform can be managed here, in respect to rendering the working gardener honest. Three things absolutely are wanting at present; viz. higher wages, education, and morality. The last, in my opinion, is the most wanted, and the most difficult to be attained. The two first will come in time. — *John Maddeson. Ghent, Dec.* 1836.

New Plants. — A considerable number of new plants have been brought home from Japan by Dr. Von Sieboldt, and deposited in the Botanic Garden of Ghent, whence some of them have already found their way to British gardens. Among these are, a beautiful new clematis, described and figured in a former page; and *Epimèdium macránthum*, to be hereafter noticed. The total number of species brought to Europe alive, by Dr. Von Sieboldt, is said to be 160. Dr. Lindley observes that "this is by far the most considerable importation from Japan that has yet been made; and its results have been so satisfactory, as to lead us to hope that the Dutch may be the means of bringing us acquainted with a larger portion of the beautiful plants of that most singular country." (*Bot. Reg.*, Nov. 1836.)

GERMANY.

A Flora Excursoria Exotica Germanica is, I understand, about to be undertaken by one of the Berlin professors. It is to be a catalogue of all the foreign

plants, hardy and tender, which are, or have been, in cultivation in Germany, with references to figures, &c., in the manner of your *Hortus Britannicus;* but with the further valuable addition of a reference to gardens in which they may be found growing, and with the prices at which they are usually sold, as in your *Arboretum Britannicum.* — *J. R. Frankfort, Dec.* 10. 1836.

The Pfauen Insel at Potsdam.— On leaving Berlin, we stopped for a couple of hours at the lovely Pfauen Insel, or Isle of Peacocks, in the Havel, near Potsdam. It is nearly an English mile long, and belongs to the king, who has a curious kind of *pied-à-terre*, or shooting-box, on it; and it is laid out partly as a zoological, partly as a botanical, garden. In the former department, the animals are more remarkable for their fine state of health than for their number or variety. In the botanical department, the palm-house, built in 1830, to receive the palms bought by the king at Paris, is very handsome; not so much, perhaps, for its exterior form, as for the interior arrangement. In the centre is a latania in full vigour, above 30 ft. in diameter in the spread of its foliage. The remainder of the house is occupied by many fine palms, *Cycàdeæ*, bambusas, dracænas, &c., interspersed with lower plants; and what adds much to the beauty is, the very tasteful manner in which the Passiflòra quadrangulàris, racemòsa, kermesìna, and other flowering creepers, are made to hang in festoons wherever the want of taller palms leaves a vacancy. The garden is under the care of M. Fintelmann, the nephew of the older Fintelmann, who is removed to the Royal Gardens of Charlottenburg, and has taken with him the fine collection of dahlias which used to be at the Pfauen Insel. (*Comp. Bot. Mag.*, vol. ii. p. 78.)

DENMARK.

Agàve americàna is now magnificently in flower in the Botanic Garden, Copenhagen; a circumstance which has only happened in that garden twice before; viz. in 1724 and 1745. The flower stem is 18 ft. high, with twenty-two branches, on which are upwards of 3000 flower buds. The leaves cover a space of 26 ft. in circumference. (*Hermès*, Nov. 30. 1836.)

Art. II. *Domestic Notices.*

ENGLAND.

Douglas's Monument. — The subscriptions for Douglas's monument being, so far as we are concerned, now nearly brought to a close, though the sum raised has not equalled our expectations, yet we cannot help doing justice to the extraordinary zeal which on this occasion has been shown by several gardeners, both at home and abroad. M. Ch. Rauch, at Vienna, has raised no less than 7*l.*; and M. Rinz, jun., at Frankfort, 15*l.* Neither of these persons, we believe, ever saw Douglas; nor is it likely that any one of those whom they induced to subscribe ever did. They must, therefore, have been influenced only by a love of the plants which Douglas introduced into German gardens, in common with those of all the rest of Europe; and by the true German spirit, which limits its approbation of merit, and its sympathy for misfortune, to no country. In England, Mr. Glendinning has been very zealous and successful; and the lady of his employer, Lady Rolle, was the first of the nobility to subscribe. Mr. Booth of Carclew (who raised 4*l.* 8*s.*), Mr. Cuthill, Mr. Carton, and a number of other gardeners, might be mentioned as having been very active and zealous, down to the last sum which we have (Jan. 10.) just received; viz. 4*l.* 7*s.*, collected by Mr. James Clark, gardener to the Earl of Lonsdale at Whitehaven Castle. To show the exertions which it is necessary to make in order to collect money for purposes of this kind, we make the following quotation from Mr. Clark's letter: — "On receiving the August Number of the *Gardener's Magazine*, containing the 'List for Subscriptions' for a monument to the late Mr. D. Douglas, the botanist, I left the paper in one of the most public places in our town, a

stationer's shop. This would not do; no one took any notice of it, or seemed at all acquainted with the history of that worthy man. So I took the three Numbers of the *Gardener's Magazine* for May, August, and November, and commenced a canvass. The delay in collecting, however, was very great: I had to leave the Numbers for a night or two with almost every person who subscribed, in order that they might become acquainted with Douglas's history. I am now happy to have it in my power to hand you the trifling sum of 4*l.* 7*s.* towards the memory of one who stands high in my estimation. The following is a list of subscribers' names," &c. &c. [This list will be given, with that of all the other subscribers, in a future Number.]

His Grace the Duke of Bedford, with that liberality and public spirit which always distinguish him, has not only subscribed to the monument which is to be erected to Douglas in his native village, but expresses a hope that, at some future day, a monument more worthy of forming a national record of the merits of this intrepid but unfortunate collector may be erected, either in the Chiswick Gardens, or in the cemetery at Kensall Green. In this hope we cordially concur; and we should like to see a second subscription set on foot among the employers of gardeners, as the present one has been chiefly confined to gardeners themselves, for this purpose; the monument, in that case, being placed in a wood or garden of Douglas's introductions. In the mean time, we think, for the reasons stated in our preceding Volume (p. 386.), that what may be called the gardeners' monument to Douglas may be most appropriately and usefully placed in his native village. The time may probably come when a temple for the busts of British worthies will be erected in the metropolis; in which the bust of Douglas might appropriately claim a place among the British naturalists. *Abies Douglàsii*, however, will make his name known amongst the profession to which he belonged better than a hundred temples.

We ought not to omit to mention here, that very great exertions have been made by many nurserymen and others, most of whom have sent their subscriptions direct to the treasurer at Perth; and Messrs. Pope and Sons, of Handsworth, near Birmingham, have raised and sent to us no less a sum than 8*l.* We intend to publish a complete list of subscribers, and an engraving of the monument, as soon as the latter is erected, and the whole affair completed.

Linnæan Society. — Dec. 6. 1836. Flowering specimens of the sea-side grape (Coccóloba pubéscens), from the Botanic Garden, Cambridge, were exhibited. Mr. Lambert exhibited two sorts of the Peruvian grain called quinoa, from his garden at Boyton House, Wilts; one of which, now termed black quinoa, he regards as a distinct species, and proposes to call it Chenopòdium altíssimum; the stems of it exhibited to the meeting being upwards of 12 ft. in height. Mr. Ward exhibited specimens of two remarkable parasitic plants; one, the Aphytèia hydnòra, from the Cape of Good Hope, and related to the gigantic rafflesia of the Indian Islands; the other, the Cynomòrium coccíneum, from the vicinity of Mount Sinai, where it is eaten by the natives. The last is also found in Malta, Sicily, and Barbary; where, however, the plant is extremely local. A notice by the chairman was read on the culture of the quinoa in Upper Peru, where, on the high plains, at an elevation of 13,000 ft. above the level of the sea, scarcely any other grain is grown; though, since the introduction of corn from Europe, the cultivation of the quinoa has greatly diminished in Lower Peru and Chili. Read, also, descriptions of two species of the natural order Coníferæ, by Professor Don, librarian to the Linnæan Society. One of these is the *Pinus brùtia*, a native of Brutium or Calabria, and nearly related to the maritime pine of Greece: the other is the *Araucària* Cunninghàmi. (*Literary Gazette*, Dec. 10.) In the *Penny Cyclopædia*, under the article Chenopodiàceæ, vol. vii. p. 39., it is stated that the seeds of quinoa "are ripened in England, and may now be purchased at any of the seed shops; but the plant can hardly be considered worth the attempt at cultivating it where any thing else will grow."

Horticultural Society's Garden. — Jan. 11. Chimonánthus frágrans and

C. f. grandiflòrus (*Arb. Brit.*, p. 938.; and *figs.* 30, 31.) are now coming beautifully into flower, against the conservative wall, with no other protection than the projecting coping of reed hurdles.

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C. f. grandiflòrus (*fig.* 31.), though less fragrant, is decidedly more ornamental than the other, from the large size and deep yellow of its flowers. It is quite delightful to behold such a display of fine blossom at this season of the year. It is only necessary to see these plants in order to desire to purchase them; and they will grow in any court-yard or town garden, provided they are trained to the south side of a wall or house. *Ribes* sanguíneum, owing to the rains of autumn and the mildness of that season having swelled the buds, is coming into flower; and the male catkins of *A*lnus incàna are fully expanded, while those of Gárry*a* ellíptica are nearly so. The advanced state of the flower buds of *C*ratæ'gus Aròn*i*a and *C.* mauroccàna confirm us in our conjecture that these two kinds of thorn are only varieties of the same species. We are happy to learn that there has been an unusually large number of applications for scions of *C*ratæ'gus this season; so we hope that the species of this most beautiful and very hardy genus of low trees will soon be extensively distributed in Britain. Considerable alterations are making in the garden, the object of which is to distribute the arboretum over a more extensive space, in order that each individual tree may display something like its natural size and shape. This is, to a certain extent, in conformity with what we have suggested in various volumes of this Magazine; but more especially in Vol. V. p. 346., and Vol. VI. p. 250. As it is impossible (at least, so it appears to us) that the Society, with their present garden, can ever do justice to the whole of the British timber trees, since the elms and poplars would alone, to do them justice, occupy the whole garden, we would suggest the idea of their confining themselves to trees and shrubs which are chiefly cultivated for ornamental purposes. Indeed, we think we have been informed that they are doing this. The forest trees can be taken up by an arboricultural society, and, doubtless, will be so in due time.

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The Botany of Battersea Fields. — At a recent meeting of the Botanical Society of London, held at their rooms, No. 11. John Street, Adelphi, a communication was read by the curator, Daniel Cooper, Esq., author of *Botanical Rambles within Thirty Miles of London*, "On the Distribution of the Localities of wild Plants in Battersea Fields," accompanied with a plan, or map, of that locality (scale, 2 ft. to the mile), in which the localities of the plants were accurately shown. To this gentleman practical botanists are indebted for this novel idea; for, if they wish to see the locality of any particular plant, they have only to refer to the plan, in which all the meadows, pastures, ditches, &c., are delineated, with the plants written in the situations where they have been found. Mr. Cooper stated that Battersea Fields have been for years past famous for the supply of specimens they have yielded to the naturalist, more particularly the botanist. He divided this locality into six districts; the meadows and pastures, cultivated fields, osier grounds, Battersea Common, &c. &c.; and under the head of each he mentioned those plants which were of rare occurrence. Of the profusion of wild plants found in this locality Mr. Cooper made the following remarks: — "Of the 104 natural orders of British flowering plants mentioned in Dr. Lindley's first edition of his *Synopsis*, 61 are found in this locality; of the 503 genera, 214 are here distributed; lastly, out of the 1500 estimated species of British flowering plants, 406 are here dispersed. Thus, in this piece of ground, which measures

about a mile and a half in length, and not quite a mile in breadth, we have more than one half of the natural orders, as 61 to 104; not quite half the genera, as 214 to 503; and rather better than one fourth the species, in the ratio of 406 to 1500." (*Morning Chronicle*, Jan. 6. 1837.)

New Kitchen-Gardens, with Flower-Gardens and Shrubberies attached, are now forming at Carclew, the seat of Sir Charles Lemon, Bart., M.P., under the direction of Mr. Beattie Booth. Mr. Rutger, who has lately returned from that part of the country, and has visited these gardens, speaks of them as among the most interesting which he ever saw. We hope Mr. Booth will favour us with a plan and description of his improvements, with all the various details of execution, planting, &c., for this Magazine. — *Cond.*

IRELAND.

Botanic Gardens, Glasnevin. — The following extract from Mr. Niven's report is alluded to in our preceding Volume, p. 620., and was intended to appear in that Volume; but, like many other miscellaneous articles, has been deferred from want of room. Mr. Niven, after enumerating the different contributions of plants, seeds, &c., which had been made to the garden, proceeds as follows: —

"Gentlemen, I feel it especially my duty to suggest how important it becomes, for the further credit and respectability of the garden, that some disposable sum of money should be placed at your command, for the purpose of contributing to the support of, and participating in the importations sent home by, foreign collectors, as does almost every similar institution in Britain; for, without some such arrangement, it will be almost impossible for me to keep equal with such establishments, or be able to act upon that reciprocal principle of interchange so essential to the well-being and respectability of the same.

"The several hot-houses are now, I am happy to say, pretty well stocked with plants; still, however, there are great deficiencies in several interesting genera, such as the *Ericeæ* and parasitical *Orchideæ*, without which no botanical garden, at the present day, can be considered complete. They are also in excellent repair, and will, when the repairs and alterations on the large round-house are completed, present accommodation of the most respectable description. A commodious potting-shed has also been erected, and an office for keeping seeds, as well as transacting the business of the garden, is also being fitted up in one of the gate-houses.

"During the ensuing winter and spring, I am most anxious to proceed to the formation of a natural arrangement of plants, on the portion of ground partly prepared for that purpose; without which the garden remains comparatively *vacant* and *incomplete*. To accomplish this, I hope to exercise all the economy in my power as regards the *labour* part of the work; but, in filling the said arrangement with plants, it will be impracticable for me so to do, without making considerable exertions in the way of collecting, by *personally* visiting such nurseries, botanic and private gardens, as will be most likely to assist in the work.

"In that portion of the garden appropriated for the culture of *agricultural specimens*, I am happy to inform you that a fair beginning has been made, in the way of *grasses*, *grains*, *roots*, &c., which, if properly followed up, will, I hope, be found of much importance to the agriculture of Ireland, as far as the introduction of the *best* and *most approved* varieties of such things is concerned. To follow up this most useful and important branch, it becomes highly requisite that I should be afforded some opportunity of *personally* examining the state of the agriculture, as well as the *foresting*, of the country; all which could be accomplished whilst in pursuit of botanical objects.

"In connexion with the above, I beg leave to annex the following report, respecting the produce of three mangel wurzel potatoes committed to my care last spring, two of which, it was stated, had produced so much as 14 st. 10 lb. The three potatoes I received were cut into thirty-two sets, and planted about

4 ft. apart *every way*. They have produced, at an average, *one stone* weight from each cut, or set; in some instances, as in that of the specimen now presented, the produce from one set is 16 lb.: some of the tubers weighed 4 lb. each. Each potato has thus produced upwards of 10 st., in all 32 st. weight; being at the rate of about 28 tons per Irish acre. Had the sets been only 3 ft. asunder, which would have been quite sufficient, the produce would have been in the proportion of about 35 tons per Irish acre.

"On analysing and comparing this species of potato with an equal weight of the Irish red apple potato, the result was as follows: —

	Starch.	Fibre, &c.
1 lb. of red apple yielded - - -	3 oz.	1 oz. full.
1 lb. of mangel wurzel potato - - -	2½ oz.	1 oz. short.

"This latter species of potato seems to be more particularly applicable to the feeding of cattle.

"For the purpose of ascertaining some doubtful points respecting the causes of failure, as alluded to in the essay on that subject last year, the following is an account of the result of *seven* additional experiments tried this year; all of which go to confirm the correctness of the opinion then advanced: —

	Produce. Stone.	lbs.
No. 1. One line of *pink-eye* potatoes, planted whole, having been previously steeped for ten hours in a strong solution of salt, made so strong as to *float an egg* - -	2	12
No. 2. An equal number of cuts prepared as above - -	3	0
No. 3. Do. do. planted *whole* on perfectly *dry* litter - - - - - -	2	12
No. 4. Do. do. cuts, as above - -	2	12
No. 5. Do. do. whole, on moist dung -	3	2
No. 6. Do. do. cuts, as above - -	2	12
No. 7. Do. do. whole, *impregnated* with a portion of a potato that had failed - - -	2	12

"From about sixty varieties of seedling potatoes raised last year, I am at present *selecting* those of the best quality, of which, I am happy to state, there are several."

The committee of botany, on presenting Mr. Niven's report, state that they "cannot omit the pleasing duty of testifying their entire approbation of the zeal and skill with which the many improvements have been carried on there during the past spring and summer, and of the very creditable state in which it appeared during the meeting of the British Association; the members of which, particularly those professionally connected with the science of botany, expressed their highest admiration of it."

An Experimental Horticultural Garden, and a National Arboretum, have been projected for the neighbourhood of Dublin, by an enlightened and active-minded individual, who has kindly promised to send us further details when the proper time arrives. Would that we could see the King's Park and Arthur's Seat laid out as an arboretum for Scotland; and the Regent's Park, Hyde Park, and Kensington Gardens, including the Royal Kitchen-Garden, laid out as an arboretum for England.

Art. III. *The West London Gardeners' Association for mutual Instruction.*

A number of gardeners being anxious to form a Society of Mutual Instruction, by conversation, reading essays, and discussions upon general, practical, and scientific subjects, several meetings were held for that purpose at Mr. Weeks's, King's Road, Chelsea, who kindly provided every necessary accommodation. At one of these meetings, held on Nov. 7., the following

rules were agreed to, and received the confirmation of the Society on Nov. 21., at Mr. Melwood's school-room, Brook Green Lane, Hammersmith, where the meetings will be held until farther notice. Knowing that you take great interest in such associations, I am happy to inform you that we have already received the entrance-money of between forty and fifty subscribers; and I send you the subjoined rules, in accordance with a resolution of the Society, that they should be forwarded to the conductors of the *Gardener's Magazine* and the *Horticultural Register*. — *Robert Fish. Tattersall's Gardens, Hyde Park Corner, Dec.* 1836.

RULES.

1. This Society shall be denominated the West London Gardeners' Association for mutual Instruction.
2. The expenses of the Society shall be defrayed from donations, and the entrance-money and subscriptions of members.
3. Each person, on becoming a member of the Society, shall pay the sum, if amateur, 5*s.*; head gardener, 2*s.* 6*d.*; journeyman, 1*s.* 6*d.*; and apprentice, 1*s.*
4. Any person, to be admitted as a member, must be recommended by a member of the Society, and voted for at the next meeting.
5. Whoever shall make a donation to the value of two guineas shall be considered a member for life.
6. Whoever shall make a donation to the value of three guineas shall be considered an honorary vice-president and member for life.
7. Each person, on becoming a member of the Society, is to give his name and address, and the same is to be entered in a book kept for that purpose by the secretary.
8. Any member changing his residence will communicate the same to the secretary.
9. The supreme government of the Society will be vested in a general meeting of its members, which shall at all times have the power to alter and remodel its rules; but due notice must be given of any proposed alteration at the previous meeting.
10. The general executive management of the Society shall be vested in a committee of twelve persons, including the office-bearers of the Society; five of which committee shall constitute a quorum.
11. The committee shall be elected every six months, and in the meantime the members of committee shall act as chairmen at the meetings of the Society, in rotation.
12. The committee of management shall have the power of regulating the order and succession of subjects proposed for discussion.
13. Any person wishing a certain subject discussed must intimate the same to a member of committee.
14. The person who proposes a certain subject for discussion will be entitled to commence that subject.
15. The secretary shall keep a book of minutes of all the proceedings of the Society; and the same to be laid upon the table at every meeting of members, for their inspection.
16. The Society shall meet every alternate Monday, at seven o'clock in the evening precisely in winter, and at eight o'clock in summer; the business of the meeting always to be finished by ten o'clock.
17. A fair balance sheet of the financial affairs of the Society shall be laid before the members every six months.
18. No visitors to be admitted more than twice, without joining the Society.
19. No refreshments allowed to be taken in the meeting-room.
20. No subjects of a religious or political nature to be discussed.
21. Any person not yielding obedience to the rules shall be disqualified for remaining a member of the Society.
22. A general meeting of members will be held every six months.

OFFICE-BEARERS.

President, ——; Vice-President, ——; Honorary Secretary, Mr. Weeks; Secretary, Mr. Fish; Treasurer, Mr. Gibbs, Dover Street.

COMMITTEE.

Messrs. Gibbs, Ayres, Temple, Stapleton, Fish, Plunket, Kean, J. Walker, France, Weeks, Robert Cattleugh, Cair.

We are much pleased to see the establishment of such a society as this; sure, as we are, that, if it be but well supported by young men anxious to advance themselves in their profession, it will do incalculable good. It will do good not only to the young men individually, both as men and as gardeners, but it will raise the profession of gardener among other professions. Gardeners should always bear this in mind, that it is one thing to advance themselves, and quite another thing to advance the art which they practise. Let them never forget that the former can only be done by gardeners themselves. The latter may be done by the employers of gardeners, and with very little advantage to the former. (See Vol. XII. p. 614.) For example, the better kinds of fruit, culinary vegetables, and flowers may be introduced into cultivation, and better implements may be devised for cultivating them, without adding one hour per week to the leisure time afforded the gardener for his own improvement or enjoyment, or 1*s.* per week for his domestic comforts. We repeat, that no power on earth is capable of raising gardeners in the scale of society, or of increasing their comforts and enjoyments, but their own exertions. Let gardeners try if they can convince the world that a superior degree of scientific knowledge will produce superior results; and, as far as respects them individually, let them endeavour further to show that the labours of a working gardener are not inconsistent with the manners of a gentleman, the knowledge of a man of education, and, above all, with the practice of both speaking and writing correctly, in all communications with his employers.

We shall be happy to report the proceedings of the Society from time to time, and to publish such papers as may be read at their meetings, when, like that of Mr. Fish (p. 49.) they are adapted for our pages.

ART. IV. *Supplement to the Provincial Horticultural Societies in the preceding Volume.*

BEDFORDSHIRE. — *Bedfordshire Horticultural Society.* — *July* 26. 1836. This was an annual show for flowers and fruit; and the most successful candidates were, the Rev. Mr. Newby, Mr. H. Moyle, and Mr. Furze. The best carnation was Hepworth's leader, and the best picotee, Miss Willoughby. Among the fruit, the largest gooseberry (the roaring lion) was shown by Mr. Furze, and weighed 20 dwt. 15 gr. The cottagers' prizes were fifty-two in number, which were distributed among twenty-seven individuals.

HAMPSHIRE. — *Hampshire Horticultural Society.* — *Nov.* 3. This was the last general meeting for the season; and there was an excellent display of autumnal fruits, pears of excellent quality and numerous varieties. The grapes, for the season, were fine. Flowers, but few, it being too early for the abundant varieties of chrysanthemums which are now grown. A great variety of vegetables, of excellent quality. The cottagers' exhibitions were very numerous, and in great variety: their apples, pears, and potatoes were good. (*Hampshire Chronicle*, Nov. 7. 1836.)

HERTFORDSHIRE. — *Hertford Horticultural Society.* — *Dec.* 13. A general summary was read of the proceedings of the year, with a list of the prizes distributed April 27., June 22., July 27., and Sept. 7. Several resolutions passed, among which were the following: — That a silver medal be presented, with the thanks of this meeting, to Mr. Francis, nurseryman, of Hertford, and to Mr. Paul, jun., nurseryman, of Cheshunt, for their services, as judges, at

the Society's exhibitions this year. — That Loudon's *Gardener's Magazine* be taken in every month, at the expense of the Society. Numbers to be left at Mr. George Simson's, Market Place, Hertford, and to be open to the inspection of any of the subscribers at any time; to be bound up at the end of the year. The show of apples and pears at this meeting was extremely fine, and the greater part of them were in perfect condition as to keeping. The Bayford golden pippin gained several prizes. Messrs. Paul, Mr. M'Mullen, and Mr. Francis sent excellent collections of fruit. (*Reformer*, Dec. 20. 1836.)

Northumberland. — *Newcastle Botanical and Horticultural Society.* — *Dec.* 9. The apples and pears were of the most splendid description, in a most excellent state of preservation, and in great variety; and the vegetables were most excellent. The chrysanthemums and camellias were very beautiful. (*Newcastle Courant*, Dec. 17. 1836.)

Lancashire. — *Gooseberry Shows for* 1836. — We have received the following account from our esteemed correspondent, Mr. Saul: — "It appears from the *Gooseberry Register* that there are only two named seedlings out this year; one white, and one yellow. The following is a list of the heaviest gooseberries grown this year in each of the four classes, with the name of the exhibitor, and of the place where each was exhibited: — Red, companion, 28 dwt., by Mr. Stubbs, at Sandon, Staffordshire; yellow, two to one, 23 dwt. 20 gr., by Mr. Hulland, Hooley Hill; green, thumper, 22 dwt., by Mr. Blear, Banbury; white, ostrich, 20 dwt. 18 gr., by Mr. Saywell, Nottinghamshire; twins, companion, 38 dwt. 6 gr., by Mr. John Brotherton, at Westaston.

Mr. Saul adds that a seedling apple, raised by himself, has borne fruit this year for the first time. The apples were produced in clusters, and one of the largest measured $3\frac{3}{8}$ in. by $3\frac{3}{4}$ in. The colour red and yellow, and the shape somewhat resembles that of a codlin. It will serve both for the kitchen and the table.

Warwickshire. — *Birmingham Botanical and Horticultural Society.* — *Oct.* 28. The annual report of the proceedings of the Society was read, from which we make the following extracts: — The collection of living plants in the garden of the Society, which is larger and more valuable than that of many older institutions, has been increased during the past year by the addition of about 700 plants and 600 kinds of seeds. These have been obtained either as donations, or by interchange with the proprietors of other collections. A collection of dried plants from the Mauritius has also been presented by Robert Bevan, Esq.; and Dr. Male has presented the first volume of Stokes's *Medical Commentaries* to the library.

The curator, Mr. Cameron, reports that, during the past year, an archery ground has been formed at the bottom of the garden; that a considerable portion of the herbaceous plants in the Linnean arrangement has been removed to the lower part of the garden, thus leaving but little space in that portion of the grounds unoccupied; that the fruit trees planted last year in the orchard are in a thriving condition, a few sorts having produced fruit this season; and that the trees and shrubs in the arboretum have also made considerable progress. About 4500 packets of seeds have been distributed to all shareholders who have applied for them, in allotments of fourteen sorts to each. Dahlias and strawberry plants have also been distributed to such of the proprietors as hold more than one share. A collection of seeds will again be ready for distribution by Dec. 1. The sale of plants and other produce of the garden, for the year ending June 1. 1836, amounts to 190*l.* 13*s.* 1*d.*, exclusive of 70*l.* 12*s.* 7*d.* deducted in discount to shareholders. In adverting to the flourishing state of the gardens, the committee cannot omit expressing the high degree of satisfaction they have felt at the judicious and indefatigable exertions of Mr. Cameron; and, in consideration of his valuable services, the committee have resolved to present him with a gratuity of 20*l.*, in addition to making a permanent increase to his salary.

With a view to facilitate the admission of strangers to the gardens, the committee have supplied the principal hotel and innkeepers with a number of

tickets, entitling the holders of them (if strangers) to be admitted on the payment of 1*s.* each. It was also stated that, since the last annual meeting, a change has been made in the plan of the exhibitions. After some negotiation, it was considered desirable by the committee to form a union with the Warwickshire Floral and Horticultural Society, under the title of the "United Exhibitions of the Birmingham Botanical and Warwickshire Floral Society," one of the main objects of which was to prevent the too frequent recurrence of exhibitions. (*Aris's Birmingham Gazette*, Oct. 31.)

Coventry and Warwickshire Floral and Horticultural Society. — June. For the flowers, Lady Hood and Mr. James Howe appear to have been the most successful competitors; and for the fruit and vegetables, Earl Craven and Lady Hood. Some very beautiful roses were sent by Earl Craven. (*Coventry Mercury*, June 25. 1836.)

Sept. 14. The show of plants, flowers, fruits, and vegetables, was most excellent; but to enumerate individually the different specimens exhibited would far exceed our limits; and we can only express our decided opinion, that, with a continuance of the industry, perseverance, and attention hitherto paid by the subscribers who have so spiritedly come forward with the productions of their gardens, the Society will flourish beyond the expectations of the most sanguine of its promoters, and that every good anticipated at its formation will be fully realised. The doors were opened about one o'clock, and in a few minutes so great was the influx of subscribers and visitors as barely to admit of passing between the stand and the tables. In conclusion, we must not omit to notice the cottagers' and artisans' table, upon which we observed a good show of vegetables and flowers; and we hope that an increasing emulation will be excited amongst that class of persons; and that much benefit, as well as pleasure, will be derived from their attention to horticultural pursuits. (*Coventry Herald*, Sept. 16.)

Nov. 15. The show of flowers, when taken in consideration with the late unfavourable state of the weather, far exceeded what might have been expected; and of the fruit, it is not too much to say that it might, without hesitation, have been put in competition with that of any place in England. The grapes, pears, and apples were particularly admired; as were the vegetables, which, considering the season of the year, were in great abundance. The prizes were gained principally by Earl Craven (to whose gardener, Mr. Oliver, the specimens shown were highly creditable), Lady Hood, Chandos Leigh, Esq., and Messrs. Howe, Herbert, and Ogden. The chrysanthemums shown by Mr. Joseph Howe and Mr. Abraham Herbert deserved the highest praise. (*Ibid*, Nov. 18.)

WALES.

General Meeting of the Swansea and Neath Horticultural Society. — Dec. 1. After the company had viewed the chrysanthemums, and other flowers and fruit, J. H. Vivian, Esq., M.P., took the chair as president, and, having briefly introduced the object of the meeting to the company, called on the honorary secretary to read the report of the managing committee, from which the following is an extract: — "The committee think it unnecessary, but in general terms, to allude to the decided advance in the last three or four years in all the leading branches of horticulture in this town and neighbourhood; and one striking benefit is, the far better supply, in quantity and quality, of these things in our market: this is one of the substantial good works of the Swansea and Neath Horticultural Society. The gardens of the rich, as well as of the poor, have productions in them *now* that were never heard of, much less seen: every new seed is tried, and the result made known, by which means all share in the advantage, and may select those most approved. The nursery and seedsmen vie in obtaining the very best and newest varieties, knowing that, as a spirit of competition is afloat, their only chance of success depends on the excellence of their articles." The report, after alluding to the number of prizes distributed during the last year among the cottagers (eighty-seven

in number), proposed the establishment of a cottagers' fund. This proposal was adopted, and about two guineas were collected from the ladies at the time, and ten names were put down as subscribers. We are happy to learn that the cottagers have applied for apple trees, according to the plan proposed in the last year's schedule. The flowers and fruit exhibited were very fine; and the principal prizes were gained by L. W. Dillwyn and J. H. Vivian, Esqrs., and M.P.s for the county. The chrysanthemums shown by Mr. Dillwyn were extremely splendid. The silver challenge box was won by Dillwyn Llewelyn, Esq. (*Cambrian*, Dec. 10.)

SCOTLAND.

Horticultural Society of Edinburgh. — *Dec.* 1. Premiums were awarded for the best six sorts of French, Flemish, or German pears, from walls: to Mr. James Arklie, gardener at Congalton, the first prize; and the second to Mr. James Smith, Hopetoun House. 2. For the finest Continental pears, from standard strees, to Mr. James Smith, Hopetoun House; the collection including beurré Diel, Marie-Louise, and Easter beurré. 3. For the best eighteen sorts of *C*hrysánthemum sinénse in flower, to Mr. John Young, gardener to Thomas Oliver, Esq., Newington Lodge, the collection containing several varieties not hitherto seen at Edinburgh. A second premium was voted for another meritorious collection, sent by Mr. John Gow, gardener to Count Flahault, Tuliallan.

Specimens of the Gogar pippin, of very small size, and of very large size, taken from the same tree, were placed on the table; the contrast strikingly evincing the signal effects of climate. The tree happening to be trained against the back wall of a peach house, with a north aspect, a branch was turned over, and introduced within the peach house; the small fruit were from the open air with little sun, and the large fruit from under the glass with full sun. These curious specimens were communicated by Mr. William Buchanan, gardener at Culdees Castle, to whom a small honorary premium was voted. Several stocks of Cardoon, as large and as well blanched as the Paris market could produce, were exhibited by Mr. James Cowan, gardener at St. Germains, to whom, likewise, a small premium was awarded. A small collection of most beautiful apples was placed on the table, and much admired. There being no competitor in this fruit on the present occasion, thanks were voted to Mr. John Clark, gardener at Gosford House, who transmitted the specimens.

The most important communication made to the meeting remains to be noticed. In consisted of a suite of named specimens of fine Flemish pears, which come into use for the dessert, in regular succession, from mid-October till mid-April, as established by many years' experiment by Sir Alexander Hope of Luffness, partly on wall trees and partly on dwarf standards. The Society's honorary gold medal was unanimously voted for this interesting communication, which we hope the Society will speedily make public, for the benefit and encouragement of horticultural improvers. A small premium was, at the same time, awarded to Mr. Peter Lockhart, the gardener at Luffness.

At this meeting we remarked that several ladies were admitted members of the Society, and that this was done by acclamation, while gentlemen were subjected to the ballot. The office-bearers for 1837 were also elected. Among the new elections we are happy to find that of Mr. Charles H. J. Smith, appointed garden-architect to the Society, and Mr. James Macnab, superintendent of the Experimental Garden. (*Edinburgh Advertiser*, Dec. 9.)

Art. V. *Restrospective Criticism.*

Erratum. — In Vol. XII. p. 695., towards the end of the first paragraph, for "painting the wood over with coal tar," read "painting the wall over with coal tar."

Johnson's Willow. (p. 715. and 716.) — In consequence of our remarks on this subject, and the communication from our correspondent at Lichfield, relative to the frontispiece to the *Salictum Woburnense*, we have received the following explanation from His Grace the Duke of Bedford: — "I have seen in the *Gardener's Magazine* of December last a sort of controversial discussion on what is called 'Johnson's Willow,' a portrait of which I have given as a frontispiece to the *Salictum Woburnense*. I will therefore state shortly what are the facts respecting that engraving. In a work which was professedly a monograph of willows, I thought I could not introduce it more appropriately than by an engraving of the celebrated tree of that genus, so commonly known by the name of 'Johnson's Willow.' I therefore commissioned Mr. Burgess, so well known for his correct delineation of trees, and the author of that beautiful work the *Eidodendron*, to go to Lichfield to take a sketch of that celebrated tree. Unfortunately, the tree was entirely destroyed by a storm before Mr. Burgess could reach Lichfield; but Lady Chetwynd, who resides in the neighbourhood, kindly sent him some sketches and an etching, said to be an exact representation of the tree a few years before it fell. Therefore Mr. Burgess certainly did not 'compile a tree,' as stated by your correspondent from Lichfield. With regard to the species of willow, it was undoubtedly the *Salix Russelliàna*, as I was personally assured by the Rev. Samuel Dickenson, rector of Blymhill, Staffordshire, an excellent botanist, and author of the natural history portion of Shaw's *Staffordshire*."—*Bedford. Baron's Court, Jan.* 15. 1837.

Destroying the Thrips. (Vol. XII. p. 495.) — The receipt for the destruction of the thrips on cucumber plants, given by Agronome's Nephew, Vol. XII. p. 495., ought to be used with a great deal of caution. About a week ago, I had cucumber plants, in boxes, in a fruiting state, and in good health, in the pine pit. They were beginning to have some of the thrips appearing: I applied the smoke, as stated, only for a short time, early in the afternoon, and not more than half an hour under the operation, when the leaves received a complete check, and never recovered; and at the same time, upon examining the leaves, the thrips were as sprightly as ever; in consequence of which I had to sow and raise plants afresh. I state these remarks, that you may have an opportunity of cautioning others. — *C. Pullar. Champion Hill, near London, Nov.* 29. 1836.

The Deanston Plough and Reaping-Machine. — I am very glad to see my early friend and benevolent patron, Mr. Smith of Deanston House, Downe, Perthshire, so very successful in his new plough. I saw him work his reaping-machine nearly twenty years ago. He is the inventor of many machines in cotton-spinning and other manufactures. — *J. Cuthill. Dyrham Park Gardens, Dec.* 1836.

Art. VI. *Queries and Answers.*

Choice of Soil from a Common.—In selecting soil from commons or pasture lands, for potting plants, making or renewing borders, or any other purpose in gardening, care is usually taken to avoid that tinctured with oxide of iron. If such soil, oxidised from mineral springs or other causes, be detrimental to the growth of plants, to what extent is it injurious? Or have any of your readers tried artificial impregnation of soil with iron, so as to ascertain accurately the result? — *R. G. Bicton, near Exeter, Dec.*, 1836.

The Black Irish Elm. — There is a tree with this name in the Horticultural Society's garden; but it does not seem to be known in Ireland. We have written to several correspondents on the subject, including Mr. Mackay and Mr. Niven, who know nothing about it. Of course, it is not mentioned in Mackay's *Flora Hibernica*. We should be glad to get information on this elm from any one; and also on the Scampston elm. — *Cond.*

A Hedge of Furze and young Privet is recommended as a close fence, as being evergreen, and as flowering beautifully in early spring, by—*G. G. Edgebaston, Dec.* 13. 1836.

Fletcher's Mode of training and managing the Black Hamburg Grape. (Vol. XII. p. 712.) — After a good deal of trouble taken by Mr. Turner, curator of the Bury Botanic Garden, and Mr. Wild, fruiterer, Tavern Street, Bury, for which we hereby acknowledge our obligations, the result is, that Mr. Fletcher would be happy to make the public acquainted with his system of management, provided, to use his own words, "I thought I had reached the summit of perfection; but, as I flatter myself something more yet remains to be accomplished, I must decline making anything public at present. After another year or two's trial, it is very probable that I shall make known every particular." — *John Fletcher, Miller at Eyke, in a Letter to Mr. Wild, dated Dec.* 12. 1836.

Art. VII. *Covent Garden Market.*

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage Plants, or Coleworts	0 2 0	0 3 6
Brussels Sprouts, per ½ sieve	0 1 6	0 3 0
Broccoli, per bunch:		
White	0 1 0	0 2 6
Purple	0 1 0	0 2 0
Legumes.		
Kidneybeans (forced), per hun.	0 3 6	0 4 0
Tubers and Roots.		
Potatoes per ton	4 10 0	6 0 0
Potatoes per cwt.	0 4 6	0 6 0
Potatoes per bushel	0 2 3	0 3 0
Kidney, per bushel	0 2 6	0 3 0
Scotch, per bushel	0 2 3	0 3 0
Jerusalem Artichokes, ½ sieve	0 1 0	0 1 6
Turnips, White, per bunch	0 0 2	0 0 4
Carrots, old, per bunch	0 0 4	0 0 6
Parsneps, per dozen	0 0 6	0 1 0
Red Beet, per dozen	0 0 9	0 1 3
Horseradish, per bundle	0 1 6	0 3 6
The Onion Tribe.		
Onions, old, per bushel	0 3 0	0 4 0
For pickling, per ½ sieve	0 2 0	0 3 0
Green (Ciboules), per bunch	0 0 2	0 0 3
Leeks, per dozen bunches	0 0 9	0 1 3
Garlic, per pound	0 0 6	0 0 8
Shallots, per pound	0 0 8	0 0 10
Asparaginous Plants, Salads, &c.		
Asparagus, per hundred:		
Large	0 7 0	0 8 0
Second, or middling	0 4 0	0 5 0
Sprue, or small	0 2 6	0 3 0
Sea-kale, per punnet	0 1 6	0 2 6
Lettuce, Cabbage, per score	0 0 6	0 0 9
Endive, per score	0 0 9	0 1 6
Celery, per bundle (12 to 15)	0 0 6	0 1 6
Small Salads, per punnet	0 0 2	0 0 3
Watercress, per dozen small bunches	0 0 8	0 1 0
Pot and Sweet Herbs.		
Parsley, per half sieve	0 1 6	0 2 6
Tarragon, dried, per doz. bun.	0 3 0	0 0 0

	From £ s. d.	To £ s. d.
Thyme, per dozen bunches	0 2 0	0 0 0
Sage, per dozen bunches	0 2 0	0 0 0
Mint, dried, per doz. bunches	0 1 0	0 0 0
Peppermint, dried, p. doz. bun.	0 1 0	0 0 0
Marjoram, dried, per doz. bun.	0 1 0	0 0 0
Savory, dried, per doz. bun.	0 1 0	0 0 0
Basil, dried, per doz. bunches	0 1 3	0 0 0
Rosemary, green, per doz. bun.	0 6 0	0 0 0
Lavender, dried, per dozen bunches	0 4 0	0 0 0
Tansy, per dozen bunches	0 1 0	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Rhubarb Stalks, per bundle	0 1 3	0 1 6
Edible Fungi and Fuci.		
Mushrooms, per pottle	0 1 0	0 1 6
Morels, per score	1 0 0	1 4 0
Truffles, English, dried, per pound	0 14 0	0 0 0
Fruits.		
Apples, Dessert, per bushel:		
Nonpareils	0 10 0	1 0 0
Ribston Pippins	0 7 0	0 8 0
American	0 15 0	1 0 0
Jersey	0 3 0	0 4 0
Pears, Dessert, per half sieve		
Passe-Colmar	0 10 0	0 14 0
Beurré de Pentecôte	0 15 0	0 0 0
Ne plus Meuris	1 0 0	0 0 0
Chestnuts, French, per peck	0 4 0	0 8 0
Pine-apples, per pound	0 4 0	0 6 0
Grapes, Lisbon, per pound	0 0 6	0 2 0
Oranges per dozen	0 0 6	0 1 6
Oranges per hundred	0 4 0	0 10 0
Bitter, per hundred	0 7 0	0 14 0
Lemons per dozen	0 0 9	0 1 6
Lemons per hundred	0 5 0	0 10 0
Sweet Almonds, per pound	0 3 0	0 0 0
Nuts, per bushel:		
Brazil	0 16 0	0 0 0
Spanish	0 18 0	0 0 0
Barcelona	1 0 0	0 0 0

Observations. — Since my report in October, the market has been steadily supplied with all articles usually furnished during this season of the year. Prices have been moderate, and the demand having been limited to the supply, there has, consequently, been but little variation in prices. Since the frost, which interrupted the supplies materially for a week or ten days, we have received everything as before; but, as the demand has been much lessened by the prevailing illness, and the general absence, up to this time, of all the principal families, a slight reduction in price has been effected in all the leading articles. But, after all, it is only in the London markets that, at this

season of the year, the different varieties of broccoli are to be observed in such perfection, and in such abundance. Already, also, are asparagus and sea-kale in good supply, and certainly very reasonable in price. Forced rhubarb is also plentiful; and some French beans have been offered. Of savoys, the market is deficient; but coleworts, cabbage plants, Brussels sprouts, and borecole are liberally furnished. Turnips, although not plentiful, are moderately supplied; carrots, very generally; potatoes, as yet, come to hand freely; onions, also, with all the minor articles, as usual. Of fruits, generally, the supply is quite equal to the demand, which suffers, with the vegetables, from the previously quoted causes. Some singularly handsome specimens of pine-apples have been recently furnished, but could not be disposed of at the very low prices quoted in the list. There are but few pears now on hand; those mentioned constitute materially the supply. Of apples, we have abundance, of excellent quality; but few importations, those principally from Jersey, of the common varieties. Until within the last week, oranges have been scarce, and much dearer than at present quoted: lemons, also, have been scarce, but are now more plentiful. Foreign grapes have come to hand in great quantities, and of excellent quality: many of them have been forwarded by steam. Nuts and chestnuts are not so abundant as usual at this season; but several cargoes are immediately expected, which may reduce the present prices. — *G. C. Jan.* 21. 1837.

Art. VIII. *The London Horticultural Society and Garden.*

Meeting, Jan. 17. 1837. — *Exhibited.* Prímula sinénsis, with double flowers, from Mr. J. Henderson, of the Wellington Nursery. Varieties of Prímula, from Mr. J. A. Henderson. Renanthèra coccínea, from S. F. Phelps, Esq. Oncídium papílio, *Euphórbia* spléndens, Lechenaúl*tia* formòsa, E'pacris campanulàta, and E. impréssa, from Mrs. Lawrence. West's St. Peter's grapes, from Mr. J. Paxton.

From the Garden of the Society. Plants. Echevèr*ia* gibbiflòra, Calánthe veratrifòlia, Rhodochiton volùbilis, *Lithospérmum rosmarinifòlium*, Gárry*a* ellíptica, Chimonánthus frágrans, and C. f. grandiflòrus. — *Fruits.* Apples: Royal reinette, London pippin, Court pendu plat, Baxter's pearmain, Dutch mignonne, Herefordshire pearmain, Pile's russet, Haggerston pippin, and northern greening. This last sort keeps long, and never shrivels. — Pears: Easter beurré, Beurré rance, Dowler's seedling, Bezi de Cassoy, Rouse lench, Bellissime d' hiver. The first three were from standards, and had been kept in white sand, a method that has been long practised by some; but it may be proper to state that the flavour is not so good if the fruit be packed immediately when gathered. This is probably owing to the fruit containing at that time much watery substance; which may be evaporated by laying the fruit some weeks on the shelves. The sand should be well dried and cool, when the fruit is packed in it.

Art. IX. *Obituary.*

M. Persoon, the learned botanist, author of *Synopsis Plantarum*, and other works, died lately in Paris, at an advanced age. He had enjoyed for some years a small pension from the French government, to whom he had sold his magnificent herbarium, the result of 50 years of research, and which was more especially rich in cryptogamic plants. (*Hermès*, Nov. 19. 1836.)

C. M. Fischer, the curator of the Botanic Garden of Göttingen, died on Dec. 19. last, after an illness of several months. He was a scientific botanist, an intelligent cultivator, and an amiable and much respected man. — *E. L.* 47. *Eaton Square, Pimlico, Jan.* 4. 1837.

Died at Edinburgh, on Nov. 2. 1836, *Mr. John Hay*, garden-architect, aged 78 years. (*Edin. Weekly Journal*, Nov. 23.) We should be glad of a biographical notice of this worthy man.

THE

GARDENER'S MAGAZINE,

MARCH, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, Secretary to the Entomological Society.

No. 1. THE TURNIP FLEA-BEETLE, commonly called the Turnip Fly.

IN commencing a series of articles upon those particular species of insects which are especially obnoxious to the horticulturist and agriculturist, a few introductory general observations will not be deemed inappropriate. It was a doctrine maintained and supported by a celebrated naturalist and political economist, whom I am proud to name as my friend, W. Spence, Esq., F.R.S. (one of the authors of the invaluable *Introduction to Entomology*), that our country was capable of maintaining its distinguished rank among nations independently of commerce, by a reliance upon its agricultural sources alone. Without, however, either admitting or denying the truth of this doctrine, one proposition is evidently deducible therefrom, namely, that the cultivation of the soil in this country is a subject of such vital importance to the general economy of the state, that every thing immediately or remotely connected therewith must necessarily possess a degree of importance, of course varying in amount according to the amount of influence which it exercises upon the productions of the soil, either in advancing the successes of the agriculturist, or defeating his long and arduous exertions. Chemistry, whereby the nature of soils and manures is obtained; mineralogy and geology, whereby the nature of the various strata of any particular district of the country, and its fitness for particular crops, may be ascertained; meteorology, in its most extended sense, whereby the changes of the weather and their causes may be learned; and botany, whereby the distinctions of vegetables, and the comparative advantages resulting from the culture of each, are shown; are all so completely part and parcel of the knowledge required by

every cultivator, that it would be deemed mere waste of words to enter into any argument in proof of the assertion.

But there are other branches of natural science in the knowledge of which the cultivator ought not to be deficient. To say that an acquaintance with the leading principles of zoology and of comparative anatomy, at least so far as regards the animals which are more especially the objects of his care, is not almost, if not quite, as requisite as a knowledge of any other of the branches of natural science mentioned above, would be an assertion capable of the easiest disproof. But it is not alone as connected with the horse, ox, or sheep, that a knowledge of the structure and habits of animals is required. There are many creatures, and especially birds, which are greatly serviceable to the farmer, by whom, through ignorance of their habits and good qualities, they are too often destroyed, being mistaken for the authors of mischief. I need not enter into the details of many instances in support of this assertion; but there is an anecdote so characteristically told by Mr. Spence in the work above alluded to, and which so forcibly illustrates this view of the subject, that I am sure it will not be deemed out of place here. The grubs of the cockchafer (*M*elolóntha vulgàris) are very destructive in pastures, eating the roots of the grass, and causing it to die. Of these grubs rooks are very fond, and they are too well aware of the dainty treat which awaits them to be far behind the plough: they will also even pull up the dead roots of grass where the larvæ harbour, and hence they are mistaken by ignorant persons for the real cause of the mischief, and scarecrows are placed to drive these useful auxiliaries away. To the remonstrances of Mr. Spence against this mode of proceeding, one of these self-willed gentlemen replied that "he could'nt beer to see d'nasty craws pull up all d'gress, and sae he'd set d'bairns to hing up some auld clauts to flay em awey. Gin he'd letten em alean, they'd sean hev reated up all d'close." Let us hope, however, that this state of ignorance is fast dying away. The publication of numerous excellent works, at low prices, has, within a very few years, done wonders in distributing knowledge; but this is not the only, nor even the chief, good which has resulted from the diffusion of cheap literature. An ardent thirst for knowledge has been produced, which can be allayed only by good and substantial information; and now, perhaps, more than ever, is the time arrived that the character of the rising generation (may we not even say, the future prosperity of our country?) depends entirely upon the nature of the materials with which this thirst for knowledge is appeased.

Amongst the benefits resulting from the desire of obtaining useful knowledge, not the least is the uprooting of many, if not all, of those absurd notions respecting the nature of numerous, and

especially the smaller, animals, of which one can but wonder how they could ever have been entertained by reasonable men, and the planting in their stead of facts deduced from strict observation. Still, however, much remains to be learned repecting the proceedings of many of the smaller animals, and especially insects, even of those which are detrimental to mankind. The reader need not be told that, until within the last five or ten years, the entomologist was almost universally deemed little better than a fool; and yet, at the very same time, hundreds of persons who joined in the cry were suffering from the devastations of insects from ignorance of their habits, which it was the especial province of the entomologist to make known. The public have now, however, learned not only that entomology is capable of affording the highest gratification from the contemplation of the beautiful structure of the creatures themselves, as well as from the observation of their curious habits and singular transformations, but, also, that it is only by a precise acquaintance with the economy of the various obnoxious species, founded upon a minute series of observations, that we shall be enabled to obtain a clue to the more effectually checking their devastating career. It is impossible that this can be done in any other manner. We may generalise till doomsday; but, in practical, as well as theoretical, science, it is only by careful examination of details, either of habits or structure, that any ultimate benefit can be obtained. Books have been written professing to give the natural history of subjects injurious to the agriculturist and horticulturist; but these have been written by persons who, although very good gardeners or farmers, knew scarcely anything of the real natural history of insects*, and who have consequently failed in giving us any new facts upon the subjects upon which they have professed to treat.

In the series of articles of which this is the first, I hope, after nearly twenty years' investigation of insects and their habits, to be able to lay before the reader facts, old and new, which may tend to the beneficial result which is so much to be desired. Let us not, however, be too sanguine: the facts of the entomologist, as I have elsewhere observed (*British Cyclopædia of Natural History*, vol. ii. p. 829.), are but a step towards the fulfilment of our wishes. The cultivator must take his share in the labour; the discovery of serviceable remedies being to be ascertained only by persons perfectly conversant with the chemical nature of soils, as well as the action of various ingredients which may be employed as remedies, not only upon the insects themselves, but also upon the plants which may be attacked. Such persons, too, are alone

* I here more especially allude to a thick octavo volume, by Mr. Major, upon the insects destructive to fruit trees, which, as regards the details of insect life, is completely deficient.

able to judge of the practicability of the application of the proposed remedies; since it would be useless for an in-door entomologist to endeavour, by experiment, to discover remedies which, when discovered, could not be adopted, from the great expense of the remedy itself, the impossibility of applying it, or the liability of the destruction, not only of the insect, but also of the plant.

No. I. The Turnip Flea-Beetle * (Háltica némorum).

Class, Insécta (Insects; that is, insected, or segmented, animals).
Order, Coleóptera (Beetles; that is, insects having the wings enclosed in wing-cases).
Family, Galerùcidæ (Plant Beetles; so named after the principal genus, Galerùca).
Genus, Háltica (of Illiger; so named from a Greek word expressive of the powers of leaping, which these insects possess).
Species, Háltica némorum (Linnæus, *Systema Naturæ*, vol. ii. p. 595.; Marsham, *Entomologia Britannica*, vol. i. p. 197.; Donovan, *Natural History of British Insects*, vol. xvi. pl. 569. fig. 1. (*fig.* 33. 1, p. 108.)

The generic character of this insect consists in the oblong-ovate form of the body; the posterior thighs greatly thickened, and formed for leaping; the tarsi of the hind legs short, and inserted at the tip of the tibiæ; the elytra punctured, not striated; the thorax not transversely impressed behind; and the posterior tibiæ not toothed.

The specific character is: Body subdepressed, of an oblong-ovate form, and brassy black colour, thickly dotted; elytra, greenish black, having an entire, broad, longitudinal pale yellow line on each wing-case, and the base of the antennæ, as well as the tibiæ and tarsi, pale clay-coloured. Length of the body, one eighth of an inch.

This insect (together with several other species belonging to the same genus, and differing from it chiefly in size, in the form of the mark upon the wing-cases, and in the colour of the legs) may be justly regarded as affording a most convincing proof of the injurious properties possessed by creatures of the smallest size. Other creatures there are of obnoxious habits; but these, in many instances, are either so conspicuous from their size, or so repulsive from their form, colour, sounds, or other properties incident to their nature, that the attention is roused, and directed at once to the remedy of injuries committed, or the avoidance of such injuries; but the turnip flea,

* This insect is usually termed the turnip fly; but, as there are several hymenopterous flies which are very destructive to the turnip, I have altered the name fly to flea, in allusion to its extraordinary leaping powers; in which respect, as well as in its small size, it bears a resemblance to the common flea. Perhaps, indeed, to prevent any mistake which might arise from calling it a turnip flea, when it is in no degree actually related to the insect after which it is named, it would be better to call it the turnip flea-beetle.

possessing as it does the power of inflicting damage to the annual amount of many hundreds of pounds*, and defended not only by its minute size, but by its astonishing powers of leaping to a very great distance on the least approach of danger, is surely an animal, above all others, calculated to teach the unthinking that, in the operations of the mighty economy of nature, size is of the least importance; and hence, that the tiny creatures which swarm around us are as worthy of our regard as those of the largest size.

It is not, however, in the destruction of the turnip plant alone that the turnip flea is obnoxious. From the improved method of agriculture, having for its object a succession of the various kinds of crops, it has been ascertained that it is most beneficial to commence the series with a crop of turnips; and, if this fails, the subsequent crops are more or less injured, and prevented from arriving at their full extent. Convinced, therefore, of the great importance of the subject, and unable to obtain, either in entomological or agricultural works, any decisive information respecting the real natural history of the turnip flea, the Committee of the Doncaster Agricultural Association issued, very extensively, in the year 1830, the following series of questions: —

1. In what sort of weather have you generally observed the fly do most mischief to the turnips?
2. At how early a period of the year have you ever known the fly begin to attack the young turnip plants?
3. Is there any period of the year after which you have ever known the fly to attack the young turnip plants?
4. Have you known instances where the fly has attacked turnips after they have put out the rough leaf?
5. When this was the case, were there any peculiarities in the season or weather?
6. Have you observed that the fly was more destructive on one kind of soil than on another? State the soil on which it has been most destructive.
7. Have you observed that the nature of the manure used has tended to increase or diminish the injury done by the fly? State the nature of the manure which you think tends most to diminish the attacks of the fly.
8. Have you observed the fly to be more prevalent in broadcast than in drilled turnips, or the reverse?
9. Have you ever tried any method to prevent or to cure the damage done by the fly? State what, and the result.

* It has been calculated by an eminent agriculturist, that, from the attacks of the Háltica alone, the loss sustained in the turnip crops in Devonshire, in one year, amounted to not less than 100,000*l.* (Young's *Annals of Agriculture*, vol. vii. p. 102., quoted by Kirby and Spence.)

10. Have you ever made any observations as to the mode in which the turnip fly is generated? State what these observations have led to.

11. Is it your opinion that the fly is more prevalent now than it used to be? If so, can you account for this, and how?

12. State any general observations you may wish on this subject.

In answer to these queries, an extensive series of replies were received from more than a hundred persons, chiefly intelligent and extensive farmers, from different parts of the country, from Yorkshire to Cornwall; from which it appears that no sooner does the plant make its appearance above ground, than it is attacked by the insect *in the perfect state;* and the first, or cotyledon, leaves being devoured, the plant immediately dies. The case is the same whether the crop be sown early or late; the insect being in full activity from April to September, and even earlier than the former, and later than the latter, month. Hence, as the chief time for effectively sowing the crop is from about midsummer until the end of July, it is evident that an alteration of the period for sowing, so as not to coincide with the time of the appearance of the insect, cannot be adopted. The answers likewise show that hot seasons are favourable for the increase of the insect; and wet ones equally obnoxious to its developement. In like manner, it is equally ascertained that it continues its attacks upon the plant after the expansion of the rough leaves.

It will be observed, that the preceding observations, and the replies obtained in answer to the queries above given, refer only to the insect in its perfect state, and that neither contain any information as to the earlier stages of the insect's life; although it is evident that, as it must undergo the changes to which other coleopterous insects are subject, and must consequently pass through the larva and pupa states, a considerable time must be occupied before the perfect beetle appears in the state in which its attack upon the young leaves is made. There is not the least shadow of ground for supposing that this is not the case, or for adopting the opinion expressed by Mr. Sutton in a pamphlet which has obtained great celebrity; namely, that the egg is deposited in the ground, and that exposing it to the influence of the sun and air is the immediate cause of the vivification of the perfect beetle. Mr. Sutton, in pursuance of this doctrine, directs the preparing of the fallows for the seed, and then leaving the land for ten days or a fortnight, whereby, for want of proper exposure, the egg is supposed to be destroyed. This opinion is, however, so unquestionably erroneous, that, if success has followed the adoption of the plan founded thereupon, it must certainly have been caused by other and incidental causes.

Another gentleman, whose communications are published,

from time to time, in the *Entomological Magazine*, under the signature of Rusticus, and who brought to the enquiry a knowledge of the habits of insects, instituted a series of experiments in order to ascertain whence the turnip beetle comes in such numbers. He says that he had always observed that there was the greatest quantity of *grubs* on very young plants, of very various size; and that it was not till the plants were a fortnight or three weeks old, that the beetles appeared in any numbers; yet that there were some beetles from the very first coming up of the plant. He was next anxious to ascertain whence it happened that there were such numbers of grubs covering the cotyledons, and states his opinion that they must have sprung from eggs, either left in the ground from the previous year, or laid on the turnip seed itself, and harvested with it in the autumn. He then details a series of experiments which led him, from their results, to suppose that the eggs of the beetle are deposited upon the seed of the turnip previously to its being harvested: indeed, he discovered on the seed a number of white flattish substances, which he concluded to be the eggs of the Háltica. Hence he adopted the practice of steeping the seeds in brine sufficiently strong to kill the supposed eggs, and yet not to injure the seed; and he states, in conclusion, that the plan was attended with very satisfactory success. In support of these statements, he adduces several facts: 1st, That self-sown turnip seed is more infested than that which is sown in the usual way; 2dly, That, when the seed is gathered in very hot dry seasons, the produce is more infested than when the seed is harvested in wet and cold seasons; and, 3dly, That, on shaking the flowers of the turnips, the perfect beetles are found amongst them.

There were, however, ample reasons for doubting the correctness of this view of the subject. The facts adduced in its support were unsatisfactory; it having been proved that the appearance of the insect was greatly influenced by the hotness or wetness of the season, and that it was found in the perfect state through the summer and autumn; so that, from the circumstance of its feeding throughout its perfect state upon the turnip, the discovery of it amongst the flowers of that plant was no proof of its intention to deposit its eggs upon the seed. But the fact that the seed of the turnip is harvested before the pods have burst open, is sufficient to show that the Hálticæ cannot deposit their eggs upon the enclosed seeds. Moreover, it is quite inconsistent with the economy of insect life, to suppose that an egg, the grub of which, when hatched, is destined to feed above ground, should be placed by the parent insect in a situation where it must necessarily be buried. Again, if the turnip fly be produced, as Rusticus presumes, from eggs laid upon the seeds, how did it happen that there were some beetles from the

very first coming up of the plant? since there would be no necessity for their living through the winter, like some butterflies, to deposit their eggs in the following spring or summer; that is, at the period when they are thus stated to be found alive. Again, if the eggs were deposited upon the seed, how did it happen that the grubs were very various in size?

I have not entered into any detail relative to the experiments of Rusticus, because, having stated the substance of these objections to the views of that writer in the *Magazine of Natural History* for the year 1834, he subsequently, in a flippant article upon the subject (*Entomological Magazine*, vol. ii. p. 505.), says, "I will hint (to others writing on the subject) that the eggs are not laid upon the seed, as I once supposed."* After such an admission, it might, perhaps, be thought needless to have entered at all upon the objections to the hypothesis that the egg is laid upon the seed, and, consequently, deposited in the ground; but the same line of reasoning may be employed in opposition to the very common opinion, that the eggs are deposited in manure.

With the view, therefore, of obtaining a more precise knowledge of the natural history of the insect than had before been made known, the Entomological Society, in 1834, offered a prize for the best essay on the subject; and consequently received several communications, embodying many facts relative to the habits of the insects. These documents have not yet been published by the Society; and it must, therefore, be evident, that I, as its secretary, am, for the present, precluded from making any use of the materials thus collected together. I think myself justified, however, in stating that it has been ascertained that the eggs are deposited upon the leaves of the turnip; a fact, indeed, which analogy would have led us to expect, in conjunction with the assertion of Latreille, that the Hálticæ "dévastent souvent les feuilles des végétaux qui sont propres à leur nourriture: leurs larves en rongent le parenchyme et s'y métamorphosent;" [often destroy the leaves of the plants suitable for their nourishment, by their larvæ devouring the parenchyma, and these undergoing their metamorphoses;] and of Rusticus, who says that the grubs feed upon the leaves of the plant.

Let us now endeavour to combine the knowledge thus obtained (in the absence of the further details in the possession of the Entomological Society) with the facts already known. It is known that, as soon as the plant appears, it is attacked by the perfect insect, which cannot, therefore, have been produced from

* It is essential that this statement should be made as public as possible, to counteract the erroneous impressions produced by the publication of the former observations of this writer, which have been translated and published in the *Horticulteur Belge*, the *Annales de la Société Entomologique de France*; and in Newman's *Grammar of Entomology*.

eggs which have had any connexion with the plant in question; either as regards the seed of such plant, or the manure in which it is sown. Whence, then, do these perfect insects come? Every one accustomed to entomological excursions during the winter is acquainted with the fact that the Hálticæ hybernate in moss, &c.; whilst it is equally well known that they feed upon other cruciform plants in the spring months, preferring, however, the turnip. It scarcely, therefore, admits of a doubt, that the perfect insects which attack the early leaves of the turnip are insects of the preceding year, produced from eggs deposited by parent beetles upon the turnip plants, after they have attained a growth sufficient to be secure from destruction from the attacks of the insects or their grubs. I have traced the metamorphoses of some of the insects belonging to the same family as the Háltica; and, from analogy, I have little hesitation in considering it as the most probable, that the transformations of these beetles are comparatively rapid. It is thus probable, that the eggs are deposited, the larvæ hatched and full-fed, and the transition to the pupa, and, ultimately, to the imago, state, effected in the course of a few weeks; so that, before the close of the summer, a generation of insects is produced, which are destined, in the following spring and summer, to become the terror of the farmer. Probably the period of the egg state is very short; so that the grubs of various sizes observed by Rusticus were, in all probability, the progeny of the beetles, few in number, observed at the first; whilst the subsequent increase in the numbers of the perfect insect may be accounted for, by supposing that the larvæ had thus soon attained their perfect state.

These observations are perfectly in unison with the known economy of some of the insects belonging to the same family as the Háltica: they violate none of the well-known principles of insect economy; and they offer a clue to the discovery of more successful, because more certain, modes of procedure, with a view to prevent the attacks of the insect. These may be divided into those which have reference, 1st, to the more healthy growth of the plant; and, 2dly, to the destruction of the insect. With regard to the former, I cannot render greater service than by transcribing the recommendations appended to the *Report of the Committee of the Doncaster Association* already mentioned, which are as follows: —

"That, most effectually to insure the speedy growth of the plant, the land should be kept in the best possible state of cultivation.

"That the fallow should be completed as early as possible, so as to give an opportunity for choosing a favourable season for sowing.

"That the system of ridging the land with manure under the rows, and drilling on the ridge, be in every possible case adopted.

"That the most favourable opportunity for ridging be chosen, particularly that the land be not ridged in too dry a state.

"That, as soon as the land is opened for the manure, it be laid in the ridges formed, and the seed drilled in immediately. The quicker these operations follow each other, the better chance there is of a good crop.

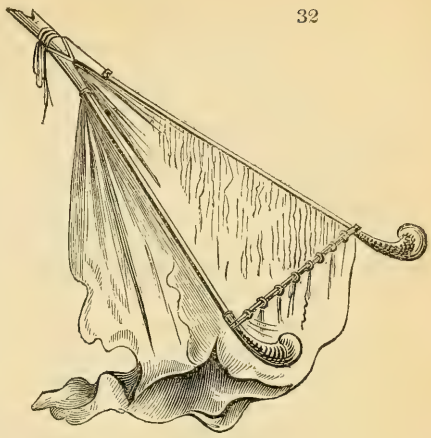
"That the manure chosen be adapted to the soil, and such as is likely to insure the speediest growth of the young plant; and that a full quantity be allowed.

"That the seed be not deposited in the manure; but the manure be thinly covered with soil, and the seed drilled in this soil.

"That a very liberal allowance of seed be given: as much as 3 lb. or 4 lb. per acre for drill, and 6 lb. or 7 lb. for broad-cast; and that the seed be of one year's growth."

With regard to those measures which have for their object the destruction of the insect, it is evident, that, as it passes the winter in the perfect state, the clearing of the hedge bottoms, and of every other place which can harbour it during the winter, should be systematically attended to. In like manner, the rooting up of all kinds of wild cruciferous plants growing in the hedges, or their immediate vicinity, which may serve for the food of the beetles until the turnips make their appearance above ground, should also be adopted. It is also evident, from what has already been said, that, as the insects, both in the larva and perfect state, continue their attacks upon the turnip after it has put on the rough leaf, and, indeed, throughout the summer, it must be advantageous to pursue some mode of proceeding for the purpose of dislodging them from the plants. Various plans have been proposed for this purpose. By some, a board, newly painted or tarred, is drawn over the field, when the insect, jumping up at its approach, is caught in the paint or tar, and destroyed.* By others, a branch of elder is drawn over the field, the insect being affirmed to be greatly annoyed by the smell of that plant. Fumigation, by burning stubble, &c., to the windward, and the spreading of ashes and soot by the hand over the plants, from time to time, as it is washed off by the rain, or swept off by the wind, have also been adopted with partial success; as well as watering the plants with a watering-machine, when the weather is particularly dry.

* I learn from M. Hoffmann of Munich, that a somewhat similar practice is adopted to prevent the attacks of the turnip fly, in the neighbourhood of that city.


32

I would, also, strenuously suggest the employment of a bag-net, similar to one invented by Mr. Paul of Starston, in Norfolk, and employed by him to clear his turnips of the Háltica. It is described and figured by Kirby and Spence (*Introd.*, vol. iv. pl. 24. fig. 3.); and the mode of its application will be evident from *fig.* 32., which is copied from the figure given by these authors.

I would recommend that this instrument should be employed not only in sweeping the grown turnips frequented by the Háltica in the latter part of the summer and autumn, but also the young plants on their first appearance, as well as the wild mustard, and other cruciform plants growing in the hedge-rows. The insects, being swept into the bag, may be easily destroyed.

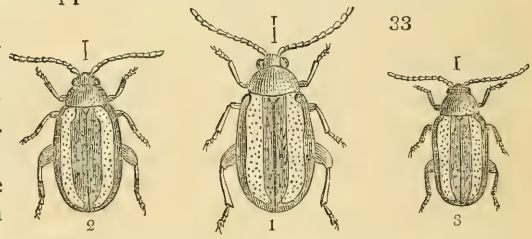
The last and, perhaps, the most successful remedy for the destruction of the insect, is, to spread quicklime over the young plant as soon as it appears above ground, to lay it on and around the plant, and to repeat it as often as wind and rain shall clear it off, until the plant be out of danger. This plan is strongly recommended by the *Report of the Doncaster Committee*, with these observations: — "Lime is so common, that it can be had in all situations; and it is so cheap, that the cost need not at all embarrass the farmer. The labour in applying it is so comparatively small, that it is capable of being generally adopted. If the fly should not appear, the lime can be used for other purposes; and no loss beyond the labour of carriage will be sustained. We may congratulate the farmer on the satisfactory testimonials in favour of this last method of preservation, and may hope it will be found of the greatest possible benefit, conjoined with other steps which have been before alluded to. We trust the careful and systematic use of lime will obviate, in a great degree, the danger which has been experienced from the turnip fly."

To these observations I will merely add that, by carefully examining the turnips at a later period of their growth, the time when the larvæ are feeding upon the leaves may be easily ascertained; and that a repetition of the process of sprinkling the lime, having first well washed the plants with water, will, in all

probability, have the effect of destroying the grubs, which are quite inactive, and unable to escape like the parent insects.

On the Species of Beetles allied to the Turnip Flea-Beetle.

The striped species of Háltica, of which the turnip flea-beetle may be considered as the type, are so much confused in entomological works (*Entomologische Hefte*, ii., *Gyllenhall*, vol. iii. and iv., *Panzer*, *Laicharting*, *Stephens*), that I have found it very difficult to ascertain with precision the identity of the Linnæan H. némorum; the original description of which is, "Saltatoria, elytris linea flava, pedibus pallidis." This description agrees with an insect sent from England by Mr. Kirby to Gyllenhall, and mentioned by him as a variety of H. flexuòsa (vol. iii. p. 533.); which species is larger, according to *Entom. Hefte* and Stephens, than the Linnæan species. In my collection I observe, however, that the yellow-legged individuals are invariably larger than those with black legs. The largest individuals which I possess have yellow legs, and are labelled by Mr. Stephens himself "némorum." I have drawn up the following descriptions from my own specimens, and have affixed thereto the synonymes which appear to me to be the most correct.



Háltica némorum. (See *fig.* 33. 1.)— Brassy black, thickly punctured; elytra with a longitudinal fulvous stripe (about one third of the breadth of each elytron), not quite straight on the outside, and incurved at the tip; basal joints of antennæ, and legs, buff; the femora, especially of the hind legs, being more or less suffused with black; male antennæ with the fourth joint enlarged. Length, 1½ lines. Syn. Háltica flexuòsa var. (*Entom. Hefte* and *Stephens.*)

The description given above perfectly agrees with the specimens of Háltica némorum preserved in the Linnæan cabinet, which I have purposely examined, to clear up all doubt upon the subject.

Háltica óchripes Curtis Brit. Ent., pl. 630. — Agrees with the preceding, except that the outside of the stripe on the elytra is incurved in the middle, forming a semicircular black emargination; the base of this stripe is also, on the outside, incurved; the legs are yellow, except the tips of the posterior femora; male antennæ with the fifth joint enlarged. Length, 1⅓ lines. Syn. Háltica flexuòsa var. β. (*Ent. Hefte*, *Gyllenh.*, vol. iii. p. 533.)

Háltica intermèdia Westw. (See *fig.* 33. 2.) — Black, scarcely

æneous; elytra with a narrow pale line, nearly straight, on the inside, but slightly curved in the middle of the outside; antennæ black, with the three basal joints fulvous; legs black; base of the tibiæ reddish; tarsi pitchy. Length, 1 line.

I have this species, named flexuòsa by Mr. Stephens, with whose description it indeed agrees; but he says it is $1\frac{1}{2}$—$1\frac{5}{8}$ lines long. It seems to agree with the variety of némorum mentioned in the *Ent. Hefte*, p. 71., with "ganz schwarz" (wholly black) legs. I have so many specimens agreeing in size and colour with this description, from different parts of the country, that I have no doubt of its being distinct. In Oxfordshire, I have observed its devastations upon turnips. The H. sinuàta of Stephens (*Illus.*, vol. iii. p. 297.) is most probably a variety of this species, with the yellow stripe externally incised.

Háltica parallèla Westw. (See *fig.* 33. 3.) — Black, scarcely tinged with brassy; much narrower and smaller than any of the preceding; the elytra have a narrow central pale buff stripe, nearly straight, and not extending to the extremity; antennæ brown, with the basal joints reddish; legs black, the tarsi alone pitchy. Length, five sixths of a line.

[These representations are magnified; and it may be necessary to state, for the sake of such of our readers as are unaccustomed to consult entomological works, that the actual length of each insect is indicated by the short black line placed near its head.]

At the meeting of the Entomological Society on Jan. 2. 1837, a memoir, by Mr. G. R. Waterhouse, was read, containing descriptions of eighteen species of Háltica, brought from New Holland by Mr. Darwin, amongst which one was described as being almost identical with the English turnip fly; and, in Mr. Cunningham's *Account of the Agriculture of New Holland*, it is stated that the turnips are attacked in that country in the same manner as in England.

The Grove, Hammersmith, Jan. 23. 1837.

ART. II. *Brief Notices, made on several Occasions, when visiting some Noblemen's and Gentlemen's Seats, in the Autumn of* 1836. By THOMAS RUTGER.

(*Continued from* p. 14.)

ISLEWORTH House; Lady Cooper. — This residence is situated on the left of the road leading from Isleworth to Twickenham, and is approached by a lodge entrance. With regard to the gardens and shrubberies, they may be considered in a state of infancy. The house, with its handsome front, stands on a lawn which gently slopes down to the Thames, and from which there is a good view of the river towards Richmond Bridge. On the

Isleworth side of the house, an arcade is formed of trelliswork, covered with creepers, through which a walk leads to a span-roofed green-house of about 50 ft. in length, which is entered at the centre by a circular projection. In front of the green-house, on the lawn, is a neat circular flower-garden, having a basin in its centre, with a vase fountain, the water having been obtained by boring to the depth of 327 ft. The extremity of the lawn, on the Twickenham side, seems to have been artificially undulated; and from this point there is a fine view of the pagoda in Kew Gardens, and also of Isleworth church. Immediately opposite the house there is an ait, or small island, in the river, which has been lately planted with Lombardy poplars, alders, &c. The lawn, on each side of the house, is sprinkled over with beds for flowers; but how far in accordance with good taste I could not ascertain, being at too great a distance from them. From the Twickenham side of the lawn, a walk leads down, through an excellent tunnel, constructed under the public road, to the kitchen-garden. The slopes at each end of the tunnel are extremely well covered with rhododendrons and laurels, kept dwarf, with a few laurustinuses sprinkled among them. The kitchen-garden within the walls contains about three acres, and has a fine wall running lengthwise, east and west, through the centre, against which are constructed two separate metallic curvilinear vineries, each of about 30 ft. long, and each stocked with fine young vines, that are very promising, and have already borne some fine fruit. At the eastern end of the kitchen-garden stands a very neat gardener's cottage, apparently with every convenience attached, and fronted by a pretty little flower-garden. At the western end is the frame-ground, which is spacious, and contains, in addition to the frames, a pine stove and a large pine pit; and also some ranges of brick pits for forcing asparagus, wherein the roots are intended to remain permanently. This being rather a novelty, it may not be amiss to give a description of them. The pits, which are about 4 ft. wide in the clear, 3 ft. deep, and 2 ft. in the clear from each other, are built of brick, with pigeon-holes, similarly to M'Phail's system for cucumbers: the 2 ft. space between the pits is, of course, for the hot dung. Mr. Over, the gardener, says that the plan answers remarkably well. He has about 200 ft. in length of these pits, which were planted, three years ago, with two-years-old roots; and it is satisfactory to see the progress they have made, some of the stalks now dying off being nearly as thick as a man's thumb. What Mr. Over has hitherto forced has been covered with hoops and mats; but, to do the work to perfection, small frames are necessary, made to the width of the pits, and a few of them, by shifting, would be sufficient to go through the season. It is likely, in the formation of these pits,

that a hint has been taken from the mode practised by the gardeners in the vicinity of Paris for forcing asparagus, a notice of which will be found in this Magazine, Vol. X. p. 147. and p. 293. The well-kept gravel walks, and cleanliness of the quarters, in this garden, together with the state of the many fine young fruit trees against the walls, and the abundance of fruit they already produce, are highly creditable to Mr. Over.

St. Margaret's; Marquess of Ailsa. — This place nearly adjoins that of Lady Cooper, on the Twickenham side; and is situated, also, on the banks of the Thames, from which the lawn is separated by a wall to its level, on which is constructed a substantial iron palisade. In taking a rapid glance through the kitchen-garden, I observed some asparagus pits, constructed similarly to those at Lady Cooper's. There is a considerable length of wall in this garden. One of the walls is devoted to pears: the trees are fine, and the walls well filled. In the border in front of this wall, a fanciful mode of pear-training is carrying on, by training the trees to circular iron trellises, of about 7 ft. in diameter, formed exactly in the shape of an inverted umbrella; the stocks of the trees being about 9 in. high. There being no pines grown here, the forcing-houses are all devoted to peaches, grapes, &c., of which there are several ranges, placed in different parts of the garden. At the back of a lawn, the exterior of which forms the section of a circle, stands a plant-house, with two circular ends, projecting in front considerably beyond the line of the centre. Round the back of the lawn is a laurel hedge; and inside the hedge a permanent iron stage is placed, of three or four steps high, to receive the greenhouse plants in summer. At the extremity of the lawn, on the Isleworth side, stands an opaque-roofed green-house, which is now (Oct. 12.) furnished with hybrid rhododendrons in large pots. Nothing can exceed the beauty of these plants, as respects their handsome growth and luxuriancy of foliage. One of them, I was given to understand, was purchased at the enormous price of *thirty guineas*. On the lawn are some of the largest specimens of the abele tree that I ever saw, with other trees of inferior note, both with respect to size and ornament. Leaving the front lawn, from which the observatory at Richmond is seen, and proceeding by the walk which leads towards the Twickenham side, we enter the flower-garden, which is laid out with gravel walks, but has the flower-beds on grass. At the back of the flower-garden, the shape of which is the segment of a circle, stands the orangery, consisting of a centre and two wings, the centre running back some 30 ft. beyond the back line of the wings. There are some orange trees, with the finest heads I have seen for many years: I counted ten among them, the average of the heads of which was about 10 ft. in diameter;

which, as far as I can recollect, is not much exceeded by the far-famed orange trees at Versailles, those having only the advantage in the length of their boles; whilst these, including about 4 ft., the height of the tubs, do not much exceed 11 ft. in height. This flower-garden, with its conservatory, has a striking effect; and, at the moment of entering it, my thoughts were involuntarily led to Dropmore. Opposite to the orangery, a straight walk leads to the opposite extremity of the flower-garden, where there is a recess constructed, somewhat corresponding in its architecture with the orangery, in which an ornamental seat is placed. Upon the whole, I was much pleased with this place; and, were it in keeping equal to what it deserves, and were exotics introduced on the lawns, such as are agreeable to the taste of modern gardening, there would be but few places, in proportion to its size, on the banks of the Thames, and so near London, that could compete with it.

Oatlands. — Persons of taste, who may have visited this place in days long gone by, must view it now with regret. The present occupier, Lord Egerton, holds it on a lease, which is fast drawing to a close: hence, perhaps, the little interest His Lordship feels in keeping up the grounds. The number of hands formerly employed for the forcing-houses and kitchen-garden alone are only now allowed for the whole place, which is information sufficient to judge from, as far as it regards the keeping up of the pleasure-grounds, &c. It is, however, satisfactory to know that the beautiful grotto, which has been admired by thousands, still exists unimpaired, although divested of its almost indispensable accompaniment, the water: inattention to the pipes has led to this result; and now, instead of the bath being full, and the limpid stream seen, broken, and trickling over, and down between the interstices of a portion of rock and shellwork on one side, to fill the pond in front of the grotto, all is dry and cheerless. Whoever, in future, may become the occupant of this once-admired place, it is to be hoped, will endeavour to restore all that is calculated to make this spot, in particular, regain its former fame.

Walton; Lady Tankerville. — This place retains all the variety and beauty for which it has been remarkable for many years. The fine specimens of plants and trees, both exotic and indigenous, are still improving, and becoming more imposing as their years increase. Mr. Richardson, the gardener, with undiminished ardour in his profession, still holds on "the noiseless tenour of his way." It is now more than forty years since our first acquaintance took place at Kew, where we worked together for some time. I always feel a more than ordinary satisfaction in visiting a place where I can recognise an old Kew companion; and, as such, I felt a particular gratification in once more having

an hour's conversation with Mr. Richardson. Your description of Walton in Vol. X. p. 335. precludes the necessity of my entering into any details respecting it. I will, therefore, only notice a few things which came under my observation. Here, grapes, in most seasons, ripen well in the open air; and, in consequence, a good portion of wall is devoted to them. Many of the bunches, I observed, were protected with bell glasses, the bunches being introduced through a hole at the top of the glasses when young, and then the glasses hung to the wall. In order to secure the grapes from the birds, Mr. Richardson sticks a line of rods into the ground, about 4 ft. from the wall, at proper distances. These rods are bent at their tops to the wall, and fixed under the coping; and over them a net is thrown. A convenient aperture, or doorway, is formed at one or both ends; so that a person, on entering, can walk the whole length of the wall, beneath the netting, without disturbing it. There is a good fig wall here, which, by a mode of pruning rather peculiar to Mr. Richardson, and somewhat on the spurring system, produces annually a fine crop. He still cultivates the dahlia with ardour, and with corresponding success; having, from time to time, been successful in bringing some good varieties into notice, some of which are well known to the floriculturists.

Woburn Farm. — Having, about thirty years ago, passed nearly six weeks at this place, I was anxious to have a view of some of the fine specimens of trees which I remember to have seen, as well as once more to take a walk over the high grounds, to have a view of the Thames, and the fine tract of country which they command; including Harrow on the Hill on one side, and Windsor Castle on the other. However, I could not succeed, as Mr. Anderson, the bailiff and gardener, informed me, that he had not been long enough in the service of the Dowager Lady King and her family to ascertain their feelings upon the subject. All, therefore, I could see was, that a new lodge had been built at the entrance of the avenue, and that the whole of the house presented quite a new aspect to what it did formerly. By taking away trees, shrubs, &c., in order to have another approach to the house, they have completely exposed to view the stables, which stand nearly opposite the avenue; and it must be some years, at least, before they can be again obscured: at present, they have a very unsightly appearance. However, it may be, perhaps, in contemplation to remove them to some other situation. A great deal of work seems to have been done to the house, and which still appears to be going forward.

St. Anne's Hill; Mrs. Fox. — The afternoon being far advanced, it subtracted considerably from the gratification I should

have enjoyed had there been time to have walked deliberately through this delightful and beautiful place. Elevated as it is, the prospects are extensive, over a fine tract of country; whilst in its internal arrangements there is every thing that is calculated to yield satisfaction and delight. Although quite a stranger, I was very kindly received by Mr. Stucker, the gardener, who has now, for about thirty years, had the management of the gardens. Being afflicted with the rheumatism, he kindly sent his son to show me through the grounds, which every where indicated care and attention, with a neatness which is seldom surpassed. The walks are numerous and diversified, displaying, at the same time, taste blended with variety. There are several erections in the pleasure ground, one of which is named the "Temple of Friendship," in which is a fine bust of the late Mr. Fox, and also one of Lord Holland. On the lawn I observed a fine specimen of the Taxòdium dístichum (deciduous cypress), about 30 ft. high. In a glass-fronted house, there are some of the finest specimens of camellias, in tubs, I ever saw: one of the striped reached to the top of the house, about 16 ft. high, with its top bent down, which is preferred to shortening it. There is also a very fine plant of the double white, with many others, all in a fine thriving state, with deep green foliage. The house they are in has a flat opaque roof, where they remain throughout the year, and which is devoted entirely to camellias. Mrs. Fox, now (1836) in her eighty-ninth year, still enjoys the variety that the place is so highly capable of yielding, by being drawn round the grounds, in fine weather, by one of the domestics.

Copse Hill, Wimbledon; Lord Cottenham. — This residence is situated on the left of the road leading from Wimbledon Common to Kingston, *via* Coombe Wood; and stands on high ground, overlooking a large tract of country towards the south-west: hence the trees on the lawn, near the house, consisting of the cedar of Lebanon, tulip tree, &c., wear a less luxuriant appearance than in many situations less exposed. The mansion has a conservatory attached, and a flower-garden in front, laid out in beds on the turf. Improvement is necessary to make this garden more agreeable to taste, as well as convenient for keeping it in order. The kitchen-garden would be an excellent one were it walled round, and a cross wall built through the centre; but, being deficient of these, less interest is felt in walking through it. It is situated at a considerable distance from the house, which makes it rather inconvenient; but its being placed in the lower part of the grounds, and sheltered on the north, renders it excellent for vegetation. Proceeding from the kitchen-garden to the house, the walk leads through a very interesting piece of lawn and shrubbery, where rhododendrons, and other

ornamental shrubs, grow exceedingly well. On leaving this shrubbery, the rising ground is nearly covered with forest trees; and here a fine opportunity is offered for an undergrowth of the common laurel, kept full, and pruned to the height of about 3 ft., as exhibited so beautifully at Claremont, and which would add great beauty to this part of the grounds. Lady Cottenham is excessively fond of the flower-garden, and His Lordship has made a great improvement at the bottom of the park, in front of the house, by grubbing up an old wood, and laying it down into pasture.

Wimbledon House; Mrs. Marryatt. — I was anxious to see this place, having heard and read so much about it; but, unfortunately, the day was wet and far advanced before I could reach it: however, I saw enough to convince me that the character of the place is kept up quite equal to your description of it in the spring of 1834 (Vol. X. p. 337.). The flower-garden was in a high state of perfection; and some alterations were in progress, which, when finished, will still heighten its beauties. Were I permitted to make one observation with respect to the straight walk which leads from the house to the flower-garden, it would be, that, instead of the row of elms on each side, I should prefer a shrubbery, which, as a matter of taste, I think would be more in unison with the clumps, and with the handsome row of vases which stand on each side of the walk: besides, in the course of a few years, the elms will destroy the possibility of keeping up in the clumps that display of floral beauty which might be with ease accomplished if they were more exposed to the light. I regretted leaving this place without being fully gratified in seeing all that was to be seen; which being understood by Mr. Redding, the gardener, he kindly told me that, at any future period, when I found it convenient to give him a call, he should be happy to accompany me round the whole.

During these excursions to the places above named, I could not help contrasting the state of gardening in general at the present period, with what it was only twenty years ago; and particularly in that department of it which is connected with floriculture, which has taken rapid strides indeed. The introduction of the great variety of hardy handsome flowering plants within the above period, together with the practice of partially acclimatising many others of great beauty, form an epoch such as, perhaps, was never calculated upon; and the mode now almost generally adopted of planting in masses, it must be acknowledged, produces a far more striking effect than that of planting in mixtures, as was done formerly. While much of beauty is thus added to the flower-garden, it has, also, been the means of accelerating the art of propagating. Formerly, a gardener might rest satisfied in the possession of two or three plants of a kind;

but now, in order to form masses in places of large extent (for instance, Dropmore), hundreds of those kinds which are held in the highest estimation must be annually propagated, in order to have a full and rich supply. It is also necessary for the gardener to study, not only the art of propagating, but, also, that of arrangement with regard to succession; so as at all times to have in his possession such a stock of plants in pots as to enable him, at any given period, to replace such of the masses as are dying off, in order to keep up a constant display of flowers throughout the season. Taste, also, by this mode is called into exercise; upon which much must depend as to the success that will be gained in the arrangement of the masses, so as to produce an harmonious whole. It is gratifying to observe that, in proportion to the numerous plants lately introduced, there seems to be a corresponding stimulus produced among the generality of those gardeners who have flower-gardens under their care, and through which nothing less than the possession of every new plant that is introduced will satisfy them. It is, also, worthy of remark, that the present system of propagating is so far in advance of what it was in former days, that, in many instances, with one tenth of the care and labour formerly bestowed, ten times the success is gained.

It has been remarked, that "there is no rule without an exception;" and I wish to apply this to the practice of fringing round clumps of evergreens with flowers, which, upon a general system, has been condemned, and I think justly so, for places on a large scale; and more especially in arboretums, or where the shrubs are considered of primary importance. In small places, however, or in compartments where it is desirable to make a floral display the distinguishing feature, I think the rule may be lawfully transgressed. A corroborating instance of this, as far as my judgment goes, may be seen at Taplow House, the seat of Pascoe Grenfell, Esq., which has been already alluded to in the above notices.

Before I close these remarks, I beg to venture an observation or two upon what I have too frequently witnessed with respect to the situations made choice of for planting such trees and shrubs as are most proper for embellishing the lawn. In many instances, it has been painful to observe trees, such as the red cedar, deciduous cypress, magnolia, with many others of, perhaps, more rare qualities, crammed into the shrubbery; while on the lawn might be seen walnuts, Spanish chestnuts, and other trees of less value; and that, frequently, within a few yards of the mansion, and to the complete exclusion of such trees and shrubs as are peculiarly adapted for the lawn. Thus, although there might be a profusion of the latter scattered through the shrubberies, not a single specimen could be found

to give a just idea of the beauty, or the nature of the habits, of any of the beautiful exotic trees introduced during the last century. It therefore follows that, in the formation of lawns and shrubberies, attention is requisite in order to give trees and shrubs their proper place, either in the shrubbery or on the lawn; as sacrifice, in some way or other, must attend an opposite procedure. A simple rule, if acted upon, would, I think, be sufficient to cure this unscientific mode of planting; namely, supposing, on a lawn, after the clumps and shrubberies are formed agreeably to the taste of the designer, there should be room enough for a dozen or two of lawn shrubs and trees: it should then be his first object to select his plants for the lawn, making choice of the handsomest, most rare, and appropriate for that purpose; and, in planting, to keep the largest and most robust-growing kinds at the greatest distance from the house. If the lawn be too small for him to introduce all he could wish, let him begin by making choice of the most select sorts, and descend, by degrees, to those of less value. I do not mean it to be understood that, upon lawns of great extent, specimens of kinds which may be considered common, but at the same time ornamental, should be entirely excluded; as, at proper distances from the house, in many instances, they might be valuable. Nor, on the other hand, is it intended to exclude altogether such as may be considered as the best kinds of lawn plants from the shrubbery: only let it be observed that, in all cases, handsome lawn plants or trees should take the precedence of common trees upon the lawn, and especially near the house; and that no lawn plant or tree should find a place in the shrubbery prior to having one, at least, of its species planted on the lawn. Perhaps it might be almost impossible, in some cases, to strictly adhere to this system; but I think, as a general principle, it should be carried out as far as possible.

Portland Place, Nov. 1836.

ART. III. *On a new Mode of grafting the Vine.* By WM. GOWANS, Cadder Gardens, near Glasgow.

I FELT somewhat interested in an article which appeared in this Magazine (Vol. XII. p. 171.), entitled "A new Method of grafting, or rather budding, Vines. By Mr. George M'Leish." Through the Glasgow Horticultural Society, I had, so early as September, 1834, transmitted to the London Society a communication, for which I received their large silver medal of that year, describing a mode of detached vine grafting far more simple and perfect, and far more likely to be successful, than that proposed by Mr. M'Leish. The following extract from

this communication will show the superior simplicity and perfection of the mode proposed by me: —

"I select a scion with one eye (*fig.* 34. *a*), and cut it into the form of a wedge. For a stock, I select a shoot of the preceding year, about the same thickness as the scion (or stocks of several years I have found attended with equal success), and cut it over a little above the second eye from the old wood (*b*). With a sharp knife I cut it down the centre nearly to the old wood. Out of each half of the stock, but chiefly out of that half which is opposite to the eye, or bud (*b*), I pare, with a penknife, as much as is necessary to make it fit the cuttings on the sides of the scion. I insert the scion with its eye (*a*) opposite to that left on the top of the stock (*b*). I tie it up, and clay it over in the usual manner; with this difference, that I cover nearly the whole of the scion with the clay, leaving only a small hole for its eye. I tie a little moss over the clay, upon which I sprinkle a little water occasionally, to keep the whole in a moist state for some time.

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"What seems of essential importance in this mode, is the eye, or young shoot (*b*), left on the top of the stock, which I allow to grow for ten or fourteen days, and then cut it off; leaving only one eye and one leaf to draw sap to the scion, till it be fairly united to the stock.

"As to the time for grafting, I find that it will succeed very well when the stocks are about to break into leaf; but I think there is more certainty of success when the shoots of the stock into which the graft is to be inserted have made four or five eyes of new wood. By this time the sap has begun to flow freely, and there is no danger of the stock suffering from bleeding: but, indeed, if vines are in good health, and thoroughly ripened, there is no danger of bleeding at any time."

As a voucher of the success of this plan, I transmitted to the Glasgow Society, along with my communication, a bunch of grapes, the produce of a graft which had been sent me from Ireland in the month of February preceding; and which, besides maturing this bunch, had grown into a strong vigorous shoot, about 22 ft. long, fully as well ripened as the rest of the wood on the same vine. With a later communication to the London Society, I sent equally splendid vouchers. But of this anon. Suffice it, in the mean time, to say, that (not to speak of fruit, but merely of the wood produced) Mr. M'Leish's *inches* of success have been doubled or trebled in *feet* by my very worst specimens.

On comparing the two methods as to principle, it must appear that Mr. M'Leish has complicated and ruined his method,

by mistaking for essential requisites to success two things which are not requisite. First, he has deemed the method of budding essential to success. Now, it is true, as he seems to have dimly perceived, that, to secure a union between the stock and the scion, it is requisite to have the suction of some vegetation on the stock above the junction; but, had he known that this requisite may be supplied by a single shoot, or bud, on the stock a little above the junction, he would never have thought of inserting his scion, or bud, below whole branches of the stock, which must draw from it all the sap, and leave it to dwindle, as appears from his statement, in the puny *inches* of wood produced. The second thing which he has reckoned essential to success is, the fitting of a flower-pot, filled with mould, around the grafts: but this, not to speak of its clumsiness, is altogether unnecessary.

My second communication on the subject to the London Society was in July, 1835. In it I proposed the practical application of my mode of grafting to the economical and expeditious proving of the unproved varieties of the vine. This was suggested by the following notice in the *Catalogue of Fruits grown in the London Horticultural Society's Garden in* 1831, under the article "Grapes:" — "The varieties of grapes are found to be in great confusion; and much difference of opinion exists respecting the comparative merits, as well as the nomenclature, of many of the sorts. In order to obtain sufficient knowledge on this subject, it is evident that a large extent of glass is requisite, under which the various kinds may be satisfactorily proved, and their synonymes ascertained. Until such is provided, much uncertainty must remain in regard to this important class of fruits. In the mean time, the generally known and acknowledged merits and characters of some have been given; and others, less certain, have been left without attaching any remark, till circumstances admit of the whole being properly examined."

On referring to the list of grapes succeeding this notice, I observed that, out of the 182 sorts mentioned, only 77 are described as having been proved, leaving 105 unproved; and, looking at the reason assigned, I thought myself warranted to suppose that the sorts yet unproved were little short of 100.

I proposed and sketched a plan, by which all these unproved sorts in the catalogue might, on my method of grafting, be proved in the space of three years, with an extent of only 64 ft. of glass, and with the sacrifice of not more than one half the usual crop already in culture, on an average of the three years; provided that the extent of glass required were already furnished with good healthy vines.

As an assurance of the success that might be expected from

the adoption of this suggestion, I mentioned that, of twenty-three grafts which I had put on that season, in the earliest division of the vinery, at various periods of advancement in the growth of the stock, two only had failed, leaving twenty-one vigorously shooting grafts; that part of these were inserted when the vines were breaking into leaf, and part when the vines had made four or five eyes of new wood; that the latter had come away much more vigorously than the former; that, in four weeks, several of the grafts had grown 7 ft.; that, when stopped, some of them had arrived from the bottom to the top of the house (17 ft.), being well-ripened wood; that several, of both periods, had shown fruit, some of which was maturing; that a considerable number of these scions (sent from the Edinburgh Society) were small and weakly, being taken, apparently, from vines growing in pots; that no further sacrifice of wood was made in their favour, than the spur on which they were inserted; and that not a single bunch was sacrificed of the main crop. In regard to some grafts transmitted from the London Society in April that year, I also mentioned, that, having inserted them in April and May, when the vines had made four or five eyes of new wood, they had all abundantly succeeded; and that some of them had been stopped, having made from 8 ft. to 10 ft. of wood. Three of these, cut off below the junction with the stock, one of them bearing a bunch of ripe grapes, I transmitted with my communication.

May I beg your acceptance of a graft of that year, cut off in the same manner, for your inspection? It is not so vigorous as many of its neighbours, nor does it so clearly show the junction, the union being very complete; but it retains the bud, or shoot, on the top of the stock, so important to success in my method of grafting.

I may mention that similar success has attended all my graftings during the past season. I may also mention, that several gardeners, my acquaintances, have gratified me with the intelligence of their complete success in this method. In particular, Mr. Smith of Hopetoun Gardens, a very intelligent friend, has informed me of his success, not only in producing vigorous shoots, but also in maturing a considerable number of bunches.

I am not aware whether the above suggestions have been adopted by the London Society, as no answer has been sent to my communication; but, trusting that you may deem the subject worthy of attention, and of some practical importance, I have sent you the above.

Cadder Gardens, Dec. 28, 1836.

ART. IV. *Notices of Gardens and Country Seats in Great Britain and Ireland, supplementary to, or corrective of, the Notices given in the "Encyclopædia of Gardening."* By various Contributors.

(*Continued from* p. 61.)

ENGLAND.

TREGOTHNAN, near Truro, Cornwall, on the river Fal; Earl of Falmouth.— The house is superbly built, with an exterior embellished with a profusion of small towers and pinnacles. The walks, which are delightfully shaded, extend in different directions over an eminence; and the whole is well wooded. The park is large, and stocked with deer, and commands a beautiful variety of scenery over the navigable waters of the Fal. The drives, which are several miles in length, afford the most enchanting prospects.

Werrington Park, near Launceston; Duke of Northumberland. — Although it lies on the Cornish side of the river Tamar, it is nevertheless considered to be in Devonshire; at least, the temporal causes of the parish of Werrington are subject to the county of Devon, while its ecclesiastical polity is connected with the archdeaconry of Cornwall; and with these circumstances, with some others, it may be considered to be attached to both counties. The house is a noble structure, situated on the southern side of the Tamar. The new buildings of this mansion, which compose a large part of the whole, have three fronts, in each of which there is a door that opens into an extensive park; the scenery of which is exceedingly rich and diversified, and has an air of great magnificence, particularly in a southern direction, where the view takes in an elegant bridge of great extent thrown across the Tamar. Here the grounds spring up in abrupt knolls, covered with foliage, which shades the waters that are winding down among the rocks, whence they burst forth, and form an expansive lake below.

Boconnoc, some distance from Bodmin; Lord Grenville. — The mansion was new modelled by Governor Pitt, who added a new wing; and the first Lord Camelford added a second, in which there is a handsome gallery, 100 ft. long. It is situated in a delightful lawn, of nearly 100 acres, which is varied by plantations and trees; and the wooded hills around rise in beautiful succession; among which a drive is carried on for six miles in circuit, giving access to every part of the grounds, and affording fine views of the scenery. The oak is more flourishing here than in most parts of Cornwall; and the beech and elm grow luxuriantly. An elegantly proportioned obelisk, at some distance, on the northern side of the house, forms a prominent feature: it was erected to the memory of Sir Richard Lyttleton, and is now surrounded by a plantation of firs. Boconnoc will be long interesting in the annals of Great Britain, from its having been alternately the head quarters of the Earl of Essex, and the court of His Majesty King Charles I. in the year 1644.

Trelowarren, five Miles South of Helstone; Sir Richard Vyvyan, Bart. — A fine old castellated building. The plantations here are very extensive, and in some parts of them the wood thrives remarkably well, and produces fine timber. The grounds about the house are of a pleasing description; and a part of the garden was, a few years ago, devoted to a systematic arrangement of plants. Near to this place are the Goonhilly Downs, on which the Cornish heath (Gypsocállis vàgans) grows spontaneously.

Clowance, near Hayle, between Helstone and Camborne. — A large portion of the estate is surrounded by a stone wall, nearly four miles in length, erected by the present Sir John St. Aubyn, which encloses the mansion, park, pleasure-grounds, garden, &c. Trees grow here better than in most places in the west of Cornwall. A fine sheet of water adds great beauty to the place, which is generally much admired by visiters. This is the first place in Cornwall where the western plane (*Plátanus occidentàlis*) was introduced.

Pendarves; Edward William Wynne Pendarves, Esq. (son to the late John Stackhouse, Esq., who, some years since, took the name of Pendarves). — The present proprietor has greatly improved this place, by extending the grounds, and giving them a park-like appearance; also by altering the approach on the south-west, and adding another at the north-east; which, with many acres of new plantations, adds considerably to the beauty of the place. The mansion has, also, been much enlarged, and, situated as it is on an eminence, presents a striking appearance when approaching it from the south-west.

Tehidy Park; Lord De Dunstanville. — His Lordship is a great planter, and, with the assistance of the pinaster, or cluster pine, has succeeded greatly in raising plantations on the bleak parts of the estate.

Trevethow; —— Praed, Esq. — This seat is worthy of notice on account of its antiquity. It stands on the west side of the river Hayle, near St. Ives, and is a place of considerable extent. The late Mr. Praed, I am informed, first introduced the pinaster into Cornwall.

SCOTLAND.

Moncrieff House, the Seat of Sir David Moncrieff, is situated about a mile to the east of the public road leading from Perth to Edinburgh, and is distant about three miles from the former town. This estate includes a large portion of the tongue of land formed by the junction of the rivers Tay and Erne. A range of hills, commencing at the junction of these rivers, extends from east to west, in a direction nearly parallel with the Erne: these gradually diminish in height as they extend to the westward, and are finally lost in the plain. Immediately to the north of the house, is the highest hill of the range, named Moncrieff Hill; the greater part of which is clothed with wood, as are the other hills extending to the east and west, in the immediate vicinity. The foreground descends gradually, with gentle undulations, from the house to the river Erne; and the greater part of it consists of grass land, interspersed with trees and plantations. The soil of these grounds is of various kinds, but all of them productive.

The house is an old square building, four stories high. An approach from the south has been made, which leaves the public road at the village of Dumbarny, or Bridge of Erne, and passes along the Old Bridge onward in a winding direction to the house.

The kitchen-garden is situated at a short distance to the eastward of the house; and the hill rises abruptly behind it. The form is a parallelogram, enclosed with a rubble wall of whinstone; and it contains about two acres of ground. It has been long famous for producing excellent peaches. In 1824, an addition of more than an acre was made to the east end of the old garden; and it was enclosed on the north and east sides with a very neat wall, 10 ft. high, built of tooled freestone. At the eastern extremity of this addition stands the gardener's house; from which a sunk fence extends all the way to the mansion-house, enclosing a number of acres in the front of the kitchen-garden; the whole of which is intended to serve as a flower-garden and shrubbery. The soil and situation render this a place peculiarly well adapted for either. The collection of exotic plants at Moncrieff, considered as a private collection, is superior to those of most places. In the kitchen-garden is a neat conservatory, of an octagonal form, 45 ft. diameter, with a stove on the east, and vinery on the west, the length of each of which is 33 ft. Upon a steep bank to the north, and adjoining the garden, is an enclosed space, with a range of pine and melon pits, about 153 ft. in length.

Adjacent to the house are two fine specimens of the horsechestnut; one of which, in 1825, measured 15 ft. in circumference at the height of 3 ft. from the ground; and near it is a walnut, evidently planted at the same time, which, at 3 ft. from the ground, measured 13 ft. in circumference. This horsechestnut is, probably, not only one of the largest, but at the same time one of the oldest, in North Britain. The greater part of the plantations upon this estate

are treated with a view to timber; and there is little or no coppice-wood. The trees occupying the hilly grounds are of various ages, up to sixty years. Very fine agates, or pebbles, are found among the rocks of these hills; and they are said to be very superior to what are generally found in the neighbouring hill of Kinnoul. A pair of ravens build their nest annually among the rocks of this hill; and I have been informed by a gamekeeper residing in the neighbourhood, that a pair of these birds will not permit another pair to reside within ten or twelve miles of their residence. The view from the summit of Moncrieff Hill has been justly celebrated: it extends over one of the most fertile and picturesque parts of Scotland.

Scone, the Seat of the Earl of Mansfield, is one of those few residences which, in Scotland, are called palaces; certain Scottish kings having been crowned there. It is situated on the eastern bank of the river Tay, two miles north of Perth, on a small portion of table land, separated from the river by a considerable extent of level meadow. To the right and left of the house the grounds descend to the Tay with an irregular surface; and behind they rise in a longitudinal winding bank, which terminates in an elevated plain. The views in front look across the river to a fertile and well-wooded distance, in which the plantations of Methven and Lyndoch are prominent features. Looking down the river, to the south, are to be seen Perth, and its very handsome bridge; and up the river, to the north, the mountains in the vicinity of Dunkeld. Full in front, the horizon closes upon Ben Voirlich, Ben More, and other mountains of the Grampian range, distant between thirty and forty miles. The present house is built on the site of the ancient palace. It is in the castellated Gothic style, from the designs of Mr. Atkinson, and substantially executed with a reddish sandstone of great durability, found on the estate. Many persons consider that it would have been in better taste to have preserved the old palace, and built a new one adjoining, connecting the two, both for effect and convenience.

The surrounding grounds, and especially towards the east, are rather unfortunately situated in respect to public roads and intervening property; the latter, chiefly cottages and gardens. This has hitherto prevented such a general arrangement as is necessary to form a suitable park. There are no proper approaches in any direction; but a number of plantations are made in different places, as component parts of a general plan, which may, or may not, be completed at some future period.

The kitchen-garden is situated to the east of the house, at the bottom of a wooded bank, and consists of about five English acres, enclosed by a brick wall. The form is nearly that of a square, subdivided into two parallelograms by a wall in the direction of east and west. The walls are covered with neatly trained fruit trees, that seldom fail to produce good crops. The hot-houses are upon the north wall of the garden: they consist of three divisions of 100 ft. each, with two houses in each division; they are 14 ft. in height, and about 10 ft. in breadth; and are wholly devoted to peaches and grapes. They are erected in a very substantial manner. The remaining forcing consists of some pine and melon pits.

In one of the peach houses, the trees are trained on a curved trellis, which reaches from the front to the back wall, and is sufficiently high to admit of walking under it. From the point where it touches the back wall, another trellis reaches to the top of the house. By this means a greater surface for training on is obtained than if there had been only one trellis, either against the back wall, or close under the glass; and the fruit is brought nearer the light than if a dwarf front trellis and upright trellis, the whole height of the back wall, had been employed. The flower-garden lies about half way between the house and kitchen-garden: it contains a good collection of deciduous shrubs and herbaceous plants; but most sorts of evergreens are liable to be destroyed by frosts.

This estate contains from 3000 to 4000 acres, of which 1434 are under plantation. One plantation, distant about three miles to the N.E. of the house,

which was planted about 100 years ago, contains 261 acres; but a very great portion has been planted within these last twenty-five years, and is in a very thriving state. It is common, where extensive plantations have been made, that they are neglected while young, and have not that attention paid to thinning, &c., that they require; but this is not the case at Scone: the young plantations here are kept in a manner that does credit to the proprietor and his gardeners.

Methven Castle, the Seat of Robert Smythe, Esq., is situated five miles to the westward of Perth. The house stands on elevated ground, richly wooded on all sides. Its form is that of a square, with four circular towers, one at each angle. To the right and left are appendages connected with it of recent erection; to the north-east, the wood of Methven is seen occupying the high grounds and sloping banks: it is of considerable extent, and bounded on the north by the river Almond, the banks of which are precipitous. This wood consists chiefly of oak, with a mixture of birch, Scotch pine, hazel, &c. The greater part is in coppice, with large trees from 60 ft. to 100 ft. apart. The view to the south-east extends over a nearly level tract of country to the high grounds north of Duplin, a distance of several miles. That part of the plain adjacent to the castle consists chiefly of meadows and ornamental plantations: beyond this, all along the valley to the westward, and the high grounds to the south, the country has a bare and bleak appearance. South-west of the Castle is a small hill, crowned with plantation. The road leading from Perth to Crieff passes along the valley between the Castle and this hill. To the north-west, the grounds consist of undulated grass lands, finely wooded. An approach-road leads from the west, and another from the east, to the Castle. That from the west is about a quarter of a mile in length, with a very neat lodge at the entrance; that from the east may be a mile or more in length, and is allowed to be one of the handsomest in Scotland. The entrance is at the village of Almond Bank, soon after it passes a beautiful small lake with sloping banks and clumps of plantation. From hence it gradually ascends in a winding direction, passing through part of the old wood, and onward to the Castle.

The kitchen-garden is situated to the west of the Castle: its form is that of a parallelogram. It contains about five acres, and is enclosed with a substantial wall, lined with brick. The western part has a declivity towards the south; that of the eastern slopes towards the south-west, and is divided by a brick wall from the former. The north wall of the western division is a hot-wall, 400 ft. in length. No houses are as yet erected. Abundant crops of culinary vegetables, apples, pears, plums, &c., are produced in this garden. A shrubbery extends from the kitchen-garden to the Castle, where it joins a neat flower-garden.

There are some fine old trees upon the bank, immediately below the Castle; one of which, an oak, has a beautiful spreading top, which, in 1825, measured 90 ft. diameter, and covers an area of 707 yards. Its trunk measured 18½ ft. circumference, and it has increased greatly in size within these thirty years. One hundred merks were offered for this tree about 120 years ago. Adjacent was a black poplar, under 60 years of age, that measured 10 ft. in circumference at 5 ft. from the ground, and contained about 90 ft. of timber. The woods upon this estate are very extensive, and are kept in good order; an excellent proof of which is, that they are found to yield a rent equal to the best corn land. The plantations of Lyndoch join those of Methven on the north, and form an extensive tract of wooded country.

The soil of this estate is various, but the greater portion approaches to that of a reddish-coloured clay: the extensive tract of low ground upon the south of the estate consists chiefly of water-worn stones and gravel, with a slight covering of decomposed gravel and vegetable matter. I am of opinion that the river Erne once flowed along this track: there is a line of bogs and lakes that have very much the appearance of the course of a river.

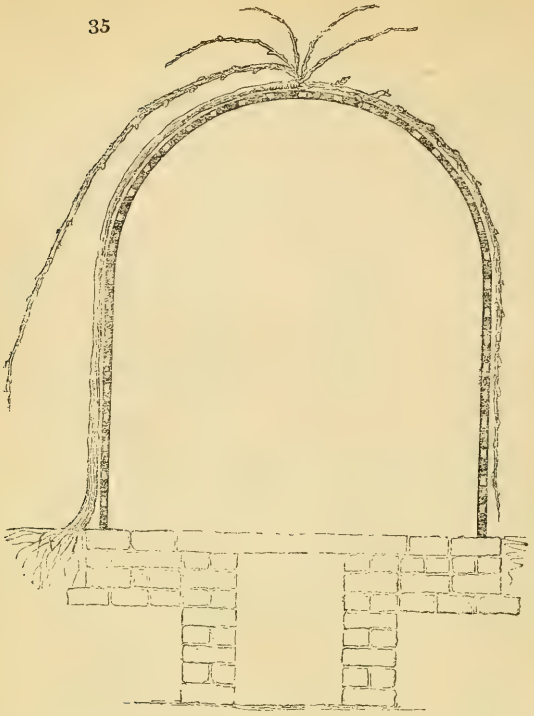
ART. V. *On the Formation and Planting of a Suburban Kitchen-Garden.* By A. FORSYTH.

I HAD almost considered it a waste of labour to give even an outline of a garden of this class, since the general practice is to lay out the pleasure-ground first, and afterwards to enclose a part of the paddock for an orchard and vegetable-ground; forming the walks of any hard rubbish coated with cinder ashes (seldom gravel), with here and there a sprig of box along the margins of the principal walks, and rows of strawberries or parsley, by way of edgings, to the subordinate alleys; while, in the orchard and against the walls, the fanciful modes of pruning and training really baffle all description; for they are in every form, from the natural mushroom shape to the tortuous zig-zag.

This, though it may appear to some a hideous-looking caricature, is certainly a true representation of the state of some gardens near London, where better things might be expected. However, it is certainly good economy to have useful edgings instead of ornamental ones, where ground is scarce; and this is pretty often the case in suburban gardens. The scarceness of room is, indeed, one of the greatest causes of complaint among all the proprietors of suburban residences; and it is one that money cannot remove; since, however wealthy their proprietors may be, they are hemmed in on every side by neighbours equally wealthy with themselves, that would not give them an acre of the land adjoining, perhaps, for several hundred pounds. So much for the present state of suburban gardens in general; though there are many honourable exceptions, and many gardens handsomely laid out, and scientifically conducted, on the state of which I am altogether incompetent to offer a criticism. From observing these defects, and what I believe to be the cause of them, I have drawn up the system of gardening detailed below, from which, I think, I may safely guarantee to the proprietor the following results: — The use of one fourth more land; a great deal more fruit of superior quality, and of the sorts most difficult, under present circumstances, to obtain (I mean, particularly, the finer sorts of apples, and the new Flemish pears); metamorphosing the walks of the kitchen-garden into bowers, covered, in spring, summer, and autumn, with abundance of flowers or fruit.

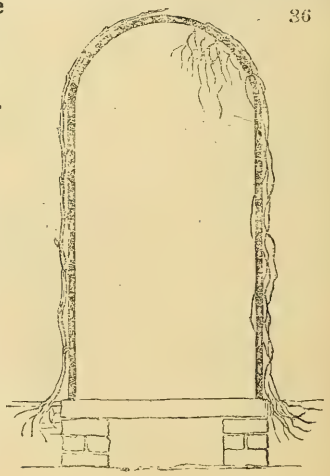
Every species of hardy fruit-bearing tree and shrub may be trained on curvilinear trellises (see *figs.* 35, 36, and 37.) over the walks and thoroughfares of the garden; which walks, when once properly drained, paved, and trellised with cast-iron arches and wire rods, will, according to the closest calculation

35

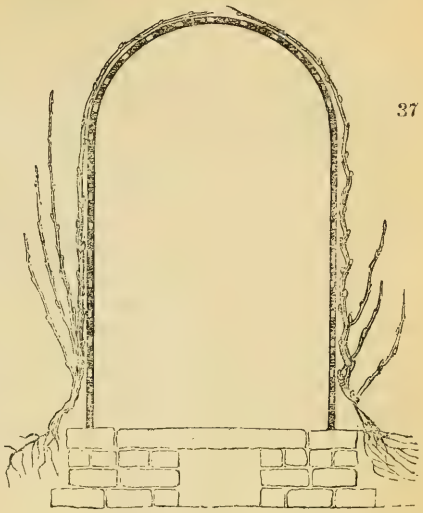


that I can make, remain cost free, painting excepted, for twenty years; at the end of which term, independently of the increase of fruit, and of the grateful shade and pleasing promenade that they will afford, they will be found cheaper than walks made of gravel, in the same way that a slated roof is found cheaper, in the long run, than one thatched, like a corn-stack, with straw and ropes every year. Besides the difference in daily comfort and annual expenditure in walks paved with beautiful blue slab slate, at all seasons clean, and ready to be traversed by the foot or the wheelbarrow, with equal impunity in frost or in thaw, there will be no more danger of dessert strawberries or garnishing parsley being mingled with the coal

36



ashes in the walks; no more cleaning and rolling of gravel; and no planting and clipping of box edgings. I should no more think of planting box in a kitchen-garden, than I should of placing a cabbage leaf as a back to a nosegay. It is high time to lay aside such medleys, and to place articles essentially ornamental in an establishment of their own. *Fig.* 38. shows the arrangement of the paving and pillars at the intersections of the walks, with the small footpath outside, for conducting the culture of the compartments. The present article is an humble but hearty attempt to combine economy of room with a high degree of excellence in the articles produced; and I trust that this will be completely effected by the plan proposed. If you examine a healthy young pear branch (*fig.* 40.), trained horizontally on a wall (for that is the fairest sample), you will find, at the end of the shoot, first, wood of the present year; next to that, the wood of the last year, which is now forming fruitful spurs; and, next to that, on the two-years-old wood, you will find the fruits. This is, unquestionably, the nature of the pear; and, though fruit spurs are produced on older wood, I have always observed the finest fruits growing on maiden spurs. To make sure work, therefore, I confine myself to them; and I hope to see breast wood, as it is called, converted to some better purpose than robbing the fruit tree border to enrich the rubbish heap. Surely, nature never meant this: neither do gardeners; yet, assuredly, they practise it. *Figs.* 39. and 40. will show the manner in which I propose to treat the pear trees in pruning; and *figs.* 41. and 42. the peaches. Every year's wood will be kept by itself; and every unnecessary leader and lateral twig removed while quite young; and not a leaf allowed to remain without a reason being found in



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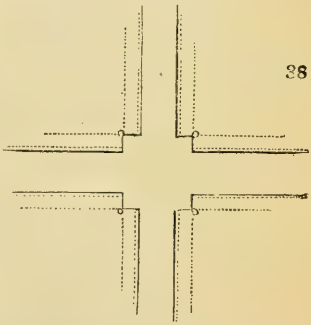
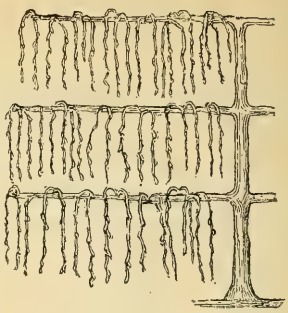


38

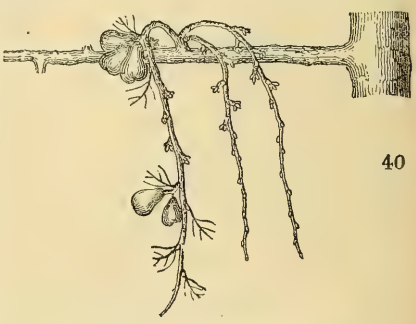
its behalf. Strange as it may appear, a careful observation will satisfy any one of the truth of this statement; and, in the end, it will be found that the gardener may safely trust for a crop to that very breast wood which we have been accustomed to cut off and throw away.

39



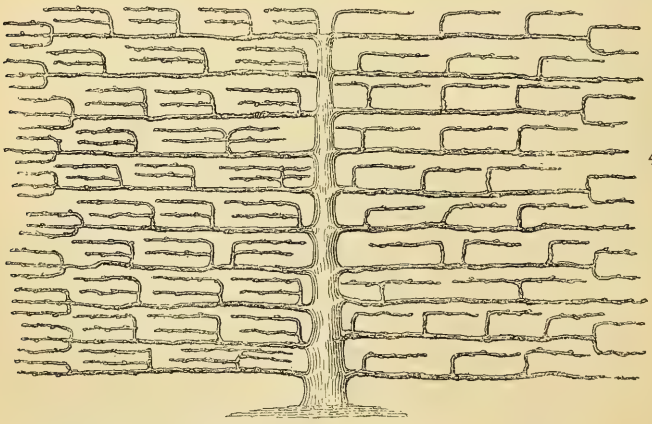
Pear tree on a wall or trellis.

In cropping the garden, every article, without exception, should be in rows; as this will save much labour in weeding, and also allow the crops to be benefited by hoeing. In *fig.* 43. I have allotted compartments for the principal crops; yet it must not be supposed that anything like an arbitrary settlement of crops is attempted, or meant to be laid down. What I have stated is only a sketch of the proportions that one class of vegetables bears to another; and that neither borrowed nor guessed at, but taken from the slips and quarters of existing establishments to which I have had access. The boundary of the accompanying sketch is — what? A hedge? No; clipped hedges bear no fruit. It is a walk overarched with stubborn or prickly fruit-bearing plants;



40

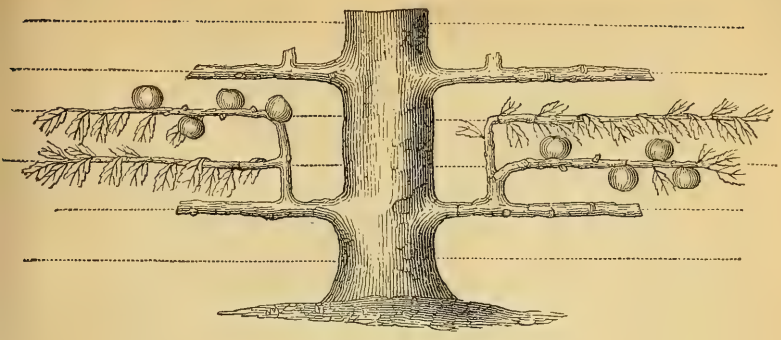
One, two, and three-years-old wood of a pear tree.



41

Peach tree before winter pruning. *After winter pruning.*

42



In fruit: showing also the seams of the bricks.

such as filberts, gooseberries, berberries, closely trained up on one side to the centre of the arch; and on the other side scarlet runners, tall peas, fruit trees, &c. Where the kitchen-garden adjoins the pleasure-ground, common laurels, carefully pruned with the knife (not clipped), will form a handsome fence and shelter. A hedge of laurels pruned in this way may be seen, at Dropmore, 33 ft. high.

The following is the arrangement of trees for the walls and arches: —

South Wall.

18 Peach trees, at 15 ft. apart	270 ft.
6 Nectarine trees, at 15 ft. apt.	90
15 Vines, at 6 ft. apart	90
10 Apricot trees, at 15 ft. apart	150
10 Fig trees, at 15 ft. apart	150
Total length of south wall,	750

North Wall.

20 Morello cherry trees, at 15 ft. apart	300 ft.
140 Gooseberry and currant trees, 3 ft. apart	420
Total length of north wall,	720

East and West Wall.

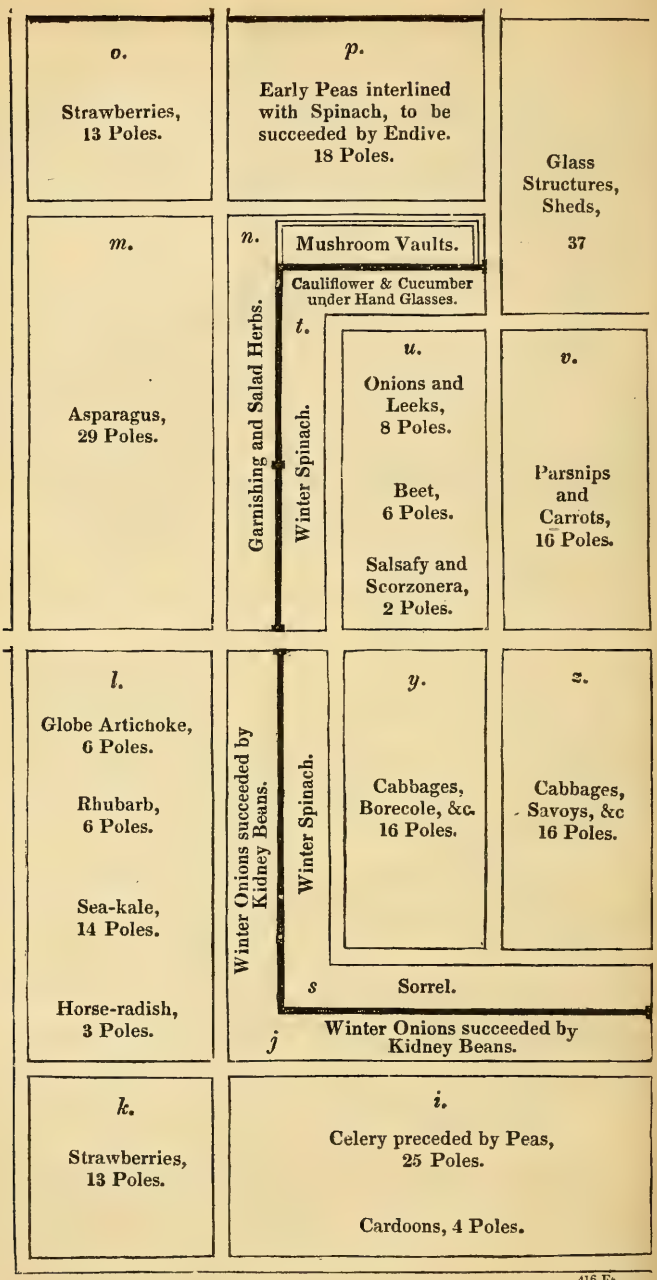
30 Pear trees, 20 ft. apart	600 ft.
10 Cherry trees, 15 ft. apart	150
10 Plum trees, 15 ft. apart	150
Total length	900

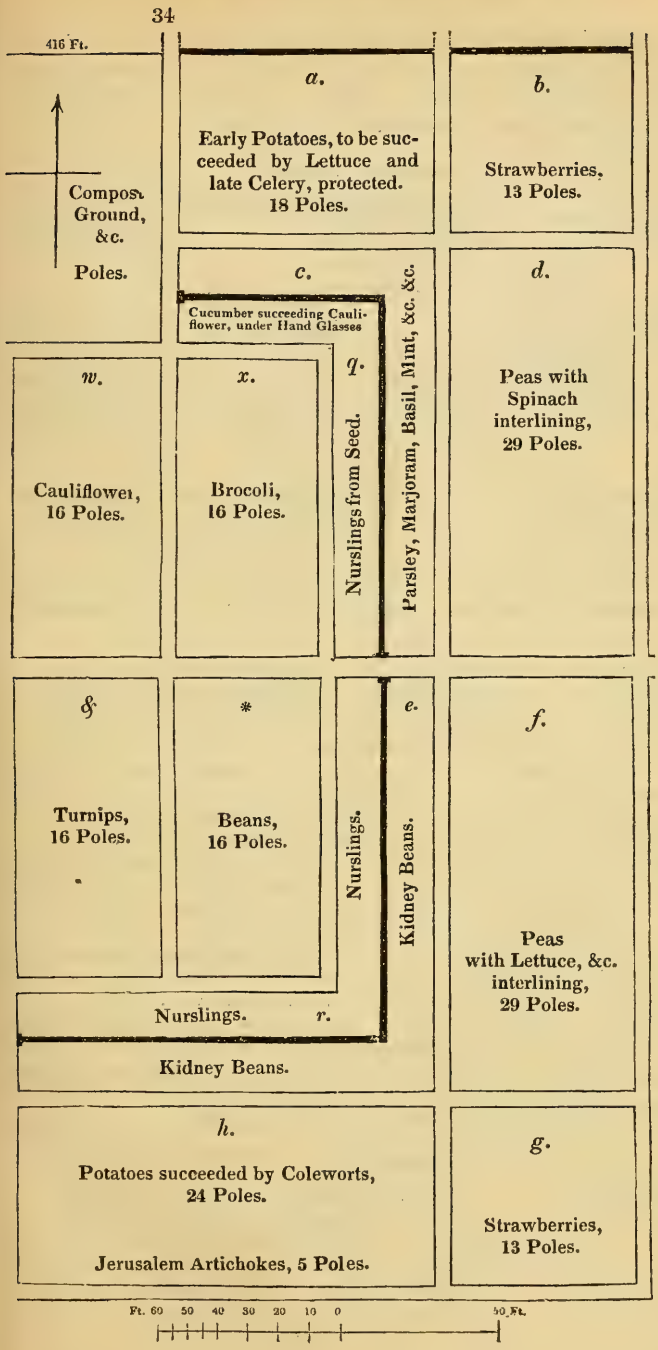
Espalier Arches.

130 Apple trees, at 15 ft. apart	1950 ft.
70 Pear trees, 15 ft. apart	1050
50 Cherry trees, at 15 ft. apart	750
50 Plum trees, 15 ft. apart	750
750 Gooseberry trees, 3 ft. apart	2250
500 Currant trees, at 3 ft. apart	1500
500 Raspberry plants, 1½ ft. apart	750
Outer half of boundary arch occupied with laurel, filberts, berberries	1260
6 Quince trees, 15 ft. apart	90
8 Medlar trees, 15 ft. apart	120
Total length	10470
being 5235 ft. of archway.	

Now, 10470 ft. of espalier arch gives space for 3490 gooseberry trees at 3 ft. apart; which, in the open quarter, in rows 6 ft. by 4 ft., would occupy 1 acre, 3 roods, 27 poles, 20 yards; only 12 poles less than 2 acres, or half the garden. And it is well known that espalier trees are surer and greater bearers

43


o.
Strawberries, 13 Poles.
p.
Early Peas interlined with Spinach, to be succeeded by Endive. 18 Poles.
Glass Structures, Sheds, 37
m.
Asparagus, 29 Poles.
n.
Mushroom Vaults.
Cauliflower & Cucumber under Hand Glasses.
Garnishing and Salad Herbs.
t.
Winter Spinach.
u.
Onions and Leeks, 8 Poles.
Beet, 6 Poles.
Salsafy and Scorzonera, 2 Poles.
v.
Parsnips and Carrots, 16 Poles.
l.
Globe Artichoke, 6 Poles.
Rhubarb, 6 Poles.
Sea-kale, 14 Poles.
Horse-radish, 3 Poles.
Winter Onions succeeded by Kidney Beans.
Winter Spinach.
y.
Cabbages, Borecole, &c. 16 Poles.
z.
Cabbages, Savoys, &c 16 Poles.
s
Sorrel.
j
Winter Onions succeeded by Kidney Beans.
k.
Strawberries, 13 Poles.
i.
Celery preceded by Peas, 25 Poles.
Cardoons, 4 Poles.
416 Ft.


34
416 Ft.
Compost Ground, &c.
Poles.
a.
Early Potatoes, to be succeeded by Lettuce and late Celery, protected.
18 Poles.
b.
Strawberries,
13 Poles.
c.
Cucumber succeeding Cauliflower, under Hand Glasses
Parsley, Marjoram, Basil, Mint, &c. &c.
d.
Peas with Spinach interlining,
29 Poles.
w.
Cauliflower,
16 Poles.
x.
Brocoli,
16 Poles.
q.
Nurslings from Seed.
&
Turnips,
16 Poles.
*
Beans,
16 Poles.
Nurslings.
e.
Kidney Beans.
f.
Peas with Lettuce, &c. interlining,
29 Poles.
Nurslings.
r.
Kidney Beans.
h.
Potatoes succeeded by Coleworts,
24 Poles.
Jerusalem Artichokes, 5 Poles.
g.
Strawberries,
13 Poles.
Ft. 60 50 40 30 20 10 0
50 Ft.

than standard ones; and, the wood and leaves being exposed to the full and equal action of the sun, perfect handsome fruits, fit for the banqueting table, which on standards would have only swelled the heap of waste and windfalls.

Select List of Peaches.

1 Avant rouge
1 Early Anne
1 Pourprée hâtive
4 French, or grosse mignonne
3 Royal George
2 Montauban
3 Noblesse
1 Bellegarde
2 Late admirable.

Nectarines.

3 Elruge
1 Violette hâtive
2 New white. This fruit is said to ripen in the latter end of August and beginning of September; and I have proved that it sometimes ripens thirty days later. It is a small fruit, adhering closely to the tree till the skin gets shrivelled. These remarks I made on specimens planted against a south wall ten miles from London.

Vines.

3 White sweetwater
3 Espérione, black
3 Black cluster
3 White muscadine, or musqué chasselas
3 Verdelho

Apricots.

2 Red masculine
2 Royal orange
2 Breda
4 Moorpark

Figs.

2 Black Ischia
2 Brunswick
2 Large white Genoa
2 Marseilles.
2 Lee's perpetual

Gooseberries.

Reds, 400.
50 Rough red
50 Champagne
50 Scotch small jam
100 Red Warrington
100 Ironmonger
50 Wilmot's early red.

Whites, 100.
25 Taylor's bright Venus
25 Wellington
50 Crystal.

Greens, 100.
50 Early rough
30 Green Walnut
20 Pitmaston green gage.

Yellows, 200.
100 Champagne
50 Early sulphur
50 Rumbullion.

Total, 800 gooseberry trees, including those for preserving, under mats, on the north wall.

Currants, 590.

290 Wilmot's large red. Whoever has seen the splendid specimens exhibited by Mr. Wilmot will wish for no other variety of red currant.
150 Black Naples
150 White Dutch.

Raspberries, 500.

200 Red Antwerp
100 Barnet
50 Double-bearing
100 Yellow Antwerp
50 Cornish.

Apples.

Kitchen Apples, 70.
10 Keswick codlin
5 Carlisle codlin
10 Hawthornden
3 Manks codlin
2 Alexander

5 Nonsuch
5 Gravenstein
2 Yorkshire greening
5 Blenheim pippin
5 Bedfordshire foundling
3 Royal russet
2 White Calville
3 Norfolk beaufin
4 French crab
3 Kerry pippin
3 French reinette.

Dessert Apples, 60.

3 White juneating
3 Red Quarrenden
2 Wormsley pippin
2 Yellow Ingestrie
2 Brookes's
3 King of pippins
3 Golden reinette
2 Cockle pippin
5 Golden pippin, old, and varieties
3 Lemon pippin
2 Downton pippin
3 Margil
7 Ribston pippin
5 Dutch mignonne
10 Nonpareils — Braddick's old, and Searle's
2 Loan's pearmain
1 Dredge's fair maid
1 Hall door
1 Shepherd's fame.

30 *Pears for the East and West Walls.*

2 Glout morceau
4 Jargonelle
1 Autumn bergamot
3 Beurré Diel
3 Marie-Louise
2 Crassane
1 Passe-Colmar
1 Bezi Vaet
3 Old Colmar
2 Pound pear
2 Uvedale's St. Germain
3 Duchesse d'Angoulême
2 Aston town
1 Cadillac.

70 *Pears for the Espalier Arches.*

6 Glout morceau
3 Jargonelle
4 Windsor
3 Autumn bergamot
4 Williams's bon Chrétien
6 Beurré de Capiaumont
2 Forelle
2 Beurré Diel
2 Gansell's bergamot
6 Marie-Louise
3 Crassane
2 Passe-Colmar
2 Bezi Vaet
3 Old Colmar
5 Napoleon
2 Brown beurré
2 Bon Chrétien
2 Chaumontelle
3 Pound pear
5 St. Germain
3 Cadillac.

Cherries, 80.

East and West Walls, 10

6 May duke
1 Blackheart
1 Whiteheart
2 Archduke.

North Wall.

20 Morellos.

Espalier Arches, 50.

14 May duke
10 Bigarreau
4 Whiteheart
4 Florence
5 Blackheart
3 Kentish
5 Archduke
5 Morello.

Plums, 60.

East and West Walls, 10.

1 Jaune hâtive
1 Early violet
1 Drap d'or
1 Green gage
1 St. Catherine
1 Purple gage
1 Coe's golden drop
1 Blue impératrice
1 White magnum bonum
1 Red magnum bonum

Espalier Arches, 50.

5 Drap d'or
10 Green gage
5 Coe's golden drop
4 Blue impératrice
6 Orleans
3 Diamond
7 Shropshire damson
5 White magnum bonum
2 Red magnum bonum
3 Coe's late red.

Filberts, 100, at 4 ft. apart, on the boundary Arch, by way of Hedge, thickly trained on the outer Half of the Espalier Arch.

25 Red — 25 White — 25 Barcelona — 25 Cosford.

Berberries, 135, at 3 ft. apart on the Fence.

100 Red — 20 Black — 15 White.

One side (the most exposed), it is presumed, is covered with laurels, 3 ft. apart, spurred and tied with wire.

ART. VI. *On the Propagating and Transplanting of Evergreens.* By JOHN TURNHILL, Gardener to Charles Cowan, Esq., Valleyfield Bank, near Pennycuick.

ON reading over Mr. Rutger's remarks upon the transplanting of evergreens (Vol. XII. p. 567.), I observe that he does not give the size of the plants which he has been so successful in transplanting, or the best method of propagating them. In the few remarks which I am about to make, I intend to give what appears to me the simplest and best method of propagating and planting evergreens; and it is one which I have practised for these ten years past. I take as many cuttings as I want from branches that are lying on the ground, which I prefer, because they are generally formed with small fibres, like maggots; and, when I cannot find any in this state, I select a plant or plants of the kind which I intend to propagate; and, taking a barrow load of good mould, I lay it all round the plant, keeping the soil shaded and damp. In the course of four months, the lower branches begin to form small fibres; and, when these are sufficiently advanced, which is generally about July 15., I prepare my cuttings, and plant them in rows; 1 ft. between the rows, and 3 in. apart in the row. By the July following, that is, twelve months after being planted, the cuttings will be found to have formed shoots from 9 in. to 12 in. long, and to have very handsome little balls. Such plants I prefer for transplanting to plants six times their age; as I can transplant them with safety at any season of the year, provided the weather be fine. I could carry such plants fifty miles, and not injure their balls. A plant of the common laurel, raised, in 1828, from a cutting treated in this manner, is now 7 ft. in height, with a head 49 ft. in circumference.

No doubt it may sometimes, for a particular purpose, be proper to transplant large plants; and, if very carefully done, in a sheltered spot, and the plants be well watered and supported afterwards, they may succeed: but a plantation of any considerable extent will acquire a body and figure sooner by being formed with small plants than with large ones. Large tall plants require to have a staff placed near them, on which they may lean, and wait patiently till small ones have grown over their heads.

When I remove any evergreen shrubs or trees, I always carry a little bast matting along with me, for my labourers to tie on the south side of the shrub or tree, as a mark to enable me to plant it in the same position with regard to north or south that it was in before; as I know from experience that it will not thrive unless this is attended to, especially if it belongs to the pine or fir tribe.

Valleyfield, Nov. 21. 1836.

ART. VII. *Notice of some Green-house and Half-hardy ligneous Plants, which have endured the open Air, for several Winters, in the Handsworth Nursery, near Birmingham.* By ALEXANDER POPE.

I HAVE herewith sent you a few specimens of shrubs, which have endured the open air with us without any protection. They are as follows: —

*Bánks*ia *australis* [Arb. Brit., p. 1306.], planted out last summer, is now (Feb. 7.) as green as a common holly; and appears quite hardy, being in an exposed situation.

*Hàke*a sp. [? *aciculàris* Arb. Brit., p. 1306.] has been planted four or five years, and has not been in the least injured by the frost. Last summer it bloomed, and has ripened seed.

Leptospérmum trinérve has stood out several years in an exposed situation, as a hardy evergreen shrub; and, last year, was so profusely covered with bloom as to appear a white mass, 3 ft. high. [The specimen sent was covered with ripe seeds. For the extreme hardiness of this genus, see *Arb. Brit.*, p. 961.; and *Gard. Mag.*, vol. xii. p. 706.; in which last place it is stated to have stood out in the open garden quite well, in the climate of Aberdeen, in Mr. Roy's nursery.]

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Leptospérmum sp. has also stood exposed for several years, and bloomed. It is now 6 ft. high. [L. grandifòlium *Arb. Brit.*, p. 961., and *fig.* 44., is much hardier than the common myrtle.]

Acàcia affìnis [*A.* dealbàta *Arb. Brit.*, p. 766.; and *fig.* 45.] has stood out exposed to the south. It is now 10 ft. high, after being four years planted; and forms a beautiful tree, with its finely pinnated glaucous leaves, as green as in the summer.

45

Grevíllea junipérina. [Arb. Brit., p. 1306.] One plant stood out for two years, in a cold and damp situation; but, being removed, it died, and we have not since tried it out.

Ceanòthus collìnus. [See *Birm. Bot. Gard.*, as quoted in *Gard. Mag.*, p. 36.; and *fig.* 46.] This is a very hardy evergreen, and produces its white flowers, from the axils of the leaves, in great abundance. Last summer it flowered twice. [The leaves are oval or roundish, glabrous and shining above, and slightly pubescent beneath: the largest is $2\frac{1}{2}$ in. long, and $1\frac{3}{4}$ in. broad.]

C. *azùreus* [Arb. Brit., p. 539.; and *fig.* 47.] has stood out as a shrub two winters, in a sheltered situation. The ends of the young branches were injured by the frost; but they produced fresh shoots in the spring, and bloomed profusely.

46

Pittósporum Tobìra [*Arb. Brit.*, p.358.; and *fig.*48.] stands in a southern exposure, is 3 ft. high, and as green as a common laurel.

47

Elæágnus songària we have growing as a shrub. You do not mention it in the *Arb. Brit.*, with the other eleagnuses. [From the sprig of winter's wood sent, and from the specific name, we should deem this identical with the *E.* orientàlis, or, at all events, only a variety of it; but we should like to see a specimen in foliage and flower. We have written to Messrs. Pope and Son, to request them to send us specimens at the proper season; and we shall give our remarks on them in the supplementary notices to our *Arb. Brit.*, which will appear from time to time in this Magazine.]

48

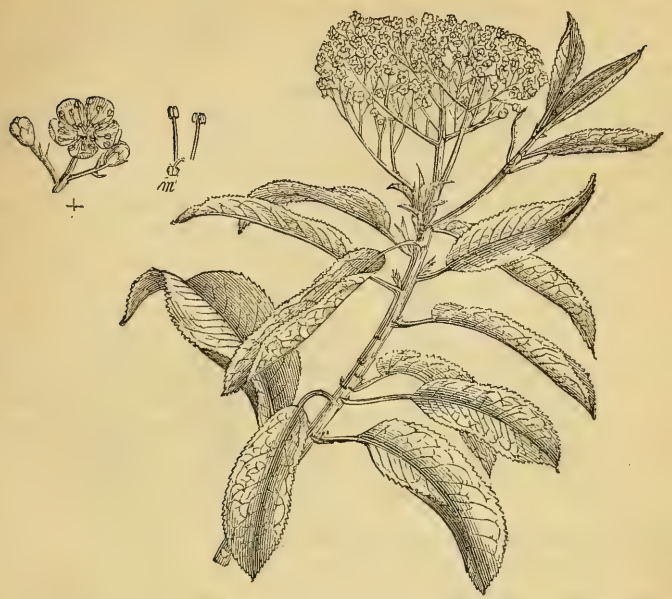
Eriobótrya japónica [Arb. Brit., p. 933.; and *fig.* 49.] has stood out three years as a hardy shrub or tree, in a sheltered spot, retaining its foliage all the winter. It is 6 ft. high. [No garden wall, either in England or Scotland, ought to be without this magnificent evergreen. In the warmest parts of Devonshire and Cornwall, it might be grafted here and there on a common hawthorn hedge.]

49

Photínia serrulàta [Arb. Brit., p. 868.; and *fig.* 50.] has been planted four years in a sheltered situation, and is now 6 ft. high. [There are trees 10 ft. and 12 ft. high of this noble evergreen at Syon; a portrait of one of which is given in the *Arb. Brit.*]

Pìnus Stròbus [? var. *pygmæ`a*], upwards of thirty years old, forms a compact tuft, about 1 ft. in height, and the same in diameter.

50



*Camélli*a *japónica rùbra plèna* [Arb. Brit., p. 384.] has stood out five years as a shrub, sheltered from the north-west, and is as green as the common laurel; but does not bloom.

*Cunninghàmi*a *lanceolàta* has been planted out seven years in a very exposed situation, and stands well; but, having been raised from a layer, it has not yet assumed a tree-like appearance, but promises to do so. It is at present a dense bush, about 3 ft. high, and 3 ft. across the head.

51

Pomadérris prunifòlia, [Arb. Brit., p. 542.], when planted out, is generally killed to the ground every winter; but springs up again in a weak state. [*P.* ellíptica, *Arb. Brit.*, l. c., and *fig.* 51. is doubtless equally hardy with P. *p*runifòlia].

52

Rìbes *sp.* The plant from which the specimen sent was taken is an evergreen, with small yellow flowers; and very sweet-scented. [*Fig.* 52. represents this specimen, which we have sent to Mr. Gordon, who agrees with us in thinking that it comes nearest *R.* punctàtum, which is also evergreen, or nearly so. See *Arb. Brit.*, p. 982.; and *fig.* 53.]

Collètia spinòsa Kunth; *C.* hórrida *W.*, *Arb. Brit.*, p. 541., and *fig.* 54. *c*; appears to be as hardy as the common furze, and is a most desirable evergreen shrub. [Retanílla *E'phedra* Bron. Collè*tia E'*phedra *Vent.*, *fig.* 54. *b*, and *Collè*tia u*lícina* Gil., *fig.* 54. *a*, of which there are plants in the open air at Messrs. Loddiges's, appear equally hardy, and add two other handsome evergreen shrubs to the British arboretum.]

Handsworth Nursery, Feb. 7. 1837.

The specimens sent are remarkably healthy and vigorous. We would strongly recommend for trial, as common shrubbery evergreens, on dry soils, all the leptospermums that can be procured; and also *C*eanòthus, Grevílle*a*, Hàke*a*, and *A*càcia. As to that delightful evergreen Photínia, it is about as hardy as the common laurel; and the splendid Eriobótrya is nearly so, when trained against a wall. We are equally astonished and delighted to find that so many half-hardy plants stand out in the neighbourhood of Birmingham; which, we suppose, must be chiefly owing to the dryness of the air, since the temperature is considerably lower than that of London. For the same reason, some trees and shrubs stand out better in the neighbourhood of Paris, the climate of which, during winter, is also colder than that of London. — *Cond.*

Art. VIII. *On the Culture of Epiphýllum truncàtum.*
By T. Symons, Gardener, Clowance.

Among the numerous beauties of Flora which adorn our stoves, there are few, in my opinion, possessing a higher claim to admiration than the Epiphýllum truncàtum. This plant should have a place in every stove; and, in the absence of a stove, a trial should be given it in every green-house. Feeling an ardent desire that this exotic may be more extensively cultivated,

and its exquisitely beautiful blossoms be witnessed by every admirer of flowers, I beg these remarks may appear in the columns of your interesting Magazine.

I could never satisfactorily grow the Epiphýllum truncàtum upon its own bottom; and, therefore, was induced to try what could be effected by grafting. In the spring of 1830, I inserted a graft on *C*áctus triangulàris, about 6 in. above the pot: the result of this experiment has been highly gratifying, and the plant is now 15 in. in height, and has pendulous branches falling in all directions to the bottom of the pot. For four years successively the plant has flowered freely, increasing the number of its blossoms as it has increased in size. In November last it produced 107 flowers, and was greatly admired by all who saw it. The compost used was one half loam, the other half equal proportions of peat and leaf mould, and the pot was well crocked at the bottom.

I have several plants of E. truncàtum growing wild upon Perésk*ia* aculeàta; but whether they will ultimately arrive at the desired perfection, remains to be proved: the wood of the latter being in texture more of the nature of a shrub than that of the former, I have my doubts; yet, having a fine plant of Cèreus flagellifórmis growing upon Perésk*ia*, I feel encouraged to hope for success.

I have a border 18 in. wide round the inside of the pit of a stove, filled with compost, in which I put such plants as I imagine will grow better in this situation than in pots. In this border, a plant of Epiphýllum speciòsum, grafted, also, on Cèreus triangulàris, was planted about eight years ago; and it is now 3 ft. 6 in. high, and 4 ft. 6 in. in diameter, and would have been much larger had it not been pruned back occasionally, to prevent it from hanging over the pathway. The plant is supported by a wood frame, the formation of which is nearly that of a parasol; and the profusion of flowers which it produces every spring is really astonishing. Last spring it presented a complete cone of flowers, to the number of above 1000. This plant having produced such a striking effect, I have planted two of the E. truncàtum in the same border, and I hope to realise similar results. This border I find to be excellent for the varieties of Gesnèr*ia*, Gloxín*ia*, Trevirà*na* coccínea, &c.; and they make a splendid show in it during the summer months.

P. S. The solandra of which I reported to you, and the account of which is published in Vol. XII. p. 413. of this Magazine, ripens its seed; and I have seedlings of it in great abundance.

Clowance, Jan. 14. 1837.

ART. IX. *On enlivening Flower or other small Gardens that surround Dwelling-houses, by Means of Zoology.* By TH. NIETNER. Translated from the *Garten Zeitung*, No. 45., for Nov. 1836.

THE following idea will, perhaps, at first sight appear whimsical, and will be laughed at by many; but those who understand it better, and who are admirers of nature, will be pleased when they see her combinations imitated.

The picture which I form to myself of a flower-garden requires it to be filled, to the greatest degree of richness and luxuriance, with all the plants which please and gratify the senses; and which should be so arranged as to afford the highest enjoyment to the mind; and, therefore, neither simplicity nor harmony in the whole should be wanting. Openness and clearness of space should also be attended to. But the charms of the flower-garden, as the frequent haunt of men, are heightened when it presents not only the beauties of still life, but is enlivened by those of animated nature; either by the delightful melody of birds, or by the brilliant colours of butterflies, and numerous other insects, which flutter around the flowers, or crawl over the beds.

Animated nature everywhere carries with it cheerfulness and delight, and produces in the sensitive man feelings of contemplation and wonder! But it is not by means of insects only that the enjoyment of a flower-garden, or of other gardens, is most heightened; but by one of a hitherto not favourite family of reptiles; which, however, have always been beloved by me, and which I have always been delighted to find inhabitants of the garden. This reptile is neither more nor less than the leaf-frog, *R*àna arbòrea. (See Vol. XII. fig. 47.)

An unusual number of leaf-frogs were seen here (Berlin) last summer, from what cause I cannot pretend to say; but it is a fact that was observed by many persons. In the month of May, when the plants were unfolding their buds to new life, and the soil covered with a lively green, I had the opportunity of obtaining thirty leaf-frogs from the pleasure-ground which surrounds the king's palace. I put them in the flower-garden which surrounds my house; and, as the year advanced, I obtained more, till the number might be said to amount to 150.

Whether they were not comfortable in their new situation, or whether it was from instinct, I do not know, but I found the greater part of them generally sitting on those plants that had either large and soft, or stiff leaves. They particularly frequented the *H*eràcle*um*, *R*hèum, Lophospérmum, *C*ánna, *R*hododéndron, and Hydrángea. I sometimes observed two of them sitting on one leaf sunning themselves. However agreeable to me these harmless creatures were, even when silent, I was much more delighted when the approaching warm weather caused their voices to be heard. Rain was not, indeed, always

the cause of their song; and they often deceived themselves, as well as me, in this respect: at least, there was a striking instance of it, when, from the continued drought of last summer, the plants were obliged to be watered every day: if a drop by chance fell from the watering-pot on the chin of any of the leaf-frogs, they raised their voices in all the varieties of tones, and seemed perfectly happy. On such occasions other leaf-frogs joined in the song, which had not received any drop from the watering-pot, and probably only did so from the example of their companions. Later in the season, when the weather changed, and heavy clouds darkened the horizon, the concerts of my frogs never ceased. In all creeks and corners, in every plant thickly clothed with leaves, whether high or low, they poured out their song: not, indeed, very melodiously, but not in discordant tones, and certainly to the best of their ability. A friend on a visit was often agreeably surprised by a hundred unexpected voices, which suddenly saluted his ears, as if by magic, from behind him, before him, near him, and on all sides. (*Garten Zeitung*, No. 45., 1836.)

ART. X. *On the Culture of the Mùsa Cavendíshii, as practised at Chatsworth.* By JOSEPH PAXTON, F.L.S., H.S., &c.

[IF any of our readers have forgotten, or should not be fully aware of, the interest which attaches to the culture of the Mùsa Cavendíshii as a new stove fruit, we request they will turn to Vol. XII. pp. 316. and 618. In November last, we wrote to Mr. Paxton, requesting to know whether the plant was still promising to answer his expectations. We have alluded to Mr. Paxton's answer in Vol. XII. p. 619., and the following is the letter itself. We have subsequently written to Mr. Paxton on the subject, and his answer, dated Jan. 29., is confirmatory of what is contained in this letter.]

The Mùsa Cavendíshii is progressing beyond any expectation I had formed of it in April last: when the fruit ripened off in May, a young one started from the bottom of the plant, which is now (Nov. 8. 1836.) of the following dimensions: — At the soil, or round the base of the stem, 2 ft. 6 in.; one foot from the soil, 2 ft. 1 in.; two feet from the soil, 1 ft. 9 in.; extreme height of the plant, 7 ft. The leaves average 4 ft. long each, and 2 ft. 6 in. broad: it has every appearance of showing fruit now, which will, no doubt, ripen about May next. From the extraordinary size of the stem, I expect a spike of fruit weighing at least 30 or 40 lb. The plant has had plenty of tub room, and plenty of water. The soil used is rich loam, with a little well-rotted dung. The temperature for this plant has been not quite so high as

has been used to two others, which are not so thick in the stem, yet have rather longer leaves. I expect we shall fruit these plants next season. I intend to build a small house to fruit about two dozen every year. The only plants that I know to be true of Mùsa Cavendíshii are at Lord Fitzwilliam's, and A. B. Lambert's, Esq., and one at the Edinburgh Botanic Garden. Mr. Cameron, with whom I have recently had some talk on this subject, assures me that he never received but two plants from the Mauritius, one of which was purchased at Mr. Barclay's sale by a Continental botanist. Messrs. Rollisson of Tooting have plants that very much resemble it; but, as there are so many kinds of dwarf musas in the Mauritius, and as the Messrs. Rollisson cannot give any satisfactory account of the introduction of their plants, I am led to doubt their origin.

By this time next season I shall have 100 plants of the M. Cavendíshii, part of which I shall have to distribute. I forgot to mention that the fruit, when ripe, was larger than any I ever saw produced by M. sapiéntum, or M. paradisìaca; and that the flavour, when in perfection, combines that of the pine-apple, the melon, and the pear. Mr. Richard Harrison, of Aighburgh, who tasted the fruit exhibited at the London Horticultural Society, pronounced it much finer flavoured than any kind of banana he had ever tasted in the West Indies. The spike of fruit, when exhibited at the Society, was rather over ripe.

Chatsworth, Nov. 8. 1836.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

The Stumps of the Silver Fir (A'*bies Pícea*) *increase in Diameter after the Tree is felled.* — M. Dutrochet, wishing to verify this fact, which he had previously observed in 1833, procured, in 1835, from the forests of the Jura, several stumps of this tree, which were in a living state when taken up. One, which was the stump of a tree felled in 1821, had thus been increasing in diameter during fourteen years; the new wood and bark being easily distinguishable from the former wood and bark, which were in a state of incipient decomposition. The total thickness of the fourteen layers of this new ligneous production was 5·669 lines (nearly half an inch) in the vertical part of the stump; and this thickness is increased to about 8·032 lines (three quarters of an inch) in the ligneous part of the callosity (*bourrelet*) protruded over a part of the section made by the axe. Another stump was that of a tree felled in 1743; and it was still full of life when it was examined at the commencement of the year 1836. The wood formed since the tree was felled consisted of ninety-two layers, the total thickness of which was nearly 2 in. The wood of which the stump was composed when the tree was felled had entirely disappeared; and the thick rim, or callosity, which had formed round the margin, had curled over so as almost to cover the top of the stump. This stump, which had lived and increased in diameter during ninety-two years, would, in all probability, have endured much longer: so that we are ignorant how far this singular prolongation of life and increase of growth may extend in stumps

deprived of their trunk and leaves, and which only receive liquid nourishment from the roots. It results from this, that the growth of trees in diameter is the result of a local developement; and that the organic matter of this increase does not descend from the upper parts of the trunk, as some physiologists still think. (*L'Hermès*, Dec. 24. 1836.)

Art. II. *Domestic Notices.*

ENGLAND.

A'*LNUS incàna* is now beautifully in flower in the Horticultural Society's Garden; and *fig.* 55. will give some, though but a faint, idea of the beauty of the male catkins of this tree. *Fig.* 56. represents *A.* víridis *Dec.*, and our *Arb.*

55

56

Brit.; *A.* fruticòsa *Schmidt*; *A.* ovàta *Lodd. Bot. Cab.*, t. 1141.; and *Bétula* ovàta *Wats. Dend. Brit.*, t. 96. This beautiful shrub, to which botanists have given so many different names, forms the connecting link between the alders and the birches; having the branching female catkins of the alder, and the samara, or winged seed, of the birch. It is now in flower, both in the Horticultural Society's Garden and at Messrs. Loddiges's; and we earnestly recommend our readers to purchase a plant of it, of *A.* incàna, and of *A.* cordifòlia (see *Arb. Brit.*, No. viii. pl. 232.), and to plant them in good soil, within the reach of water, where they will soon grow vigorously, and flower freely every winter. *A.* cordifòlia (*fig.* 57.) is a magnificent tree, with fine, large, smooth, deep green, cordate leaves, by far the handsomest of the genus; and, though there are abundance of plants of it in the nurseries, it is rarely to be met with beyond their precincts. The only tree,

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not in the environs of London, that we know of, is at Britwell House, Bucks, the residence of W. H. Miller, Esq., M.P., from which a specimen was lately sent to us by W. Christy, jun., Esq. — *Cond.*

IRELAND.

A Root of Horseradish, 7 ft. 4 in. long, was shown us, Feb. 10., by Mr. Arthur Kimber, late cottage-gardener to the Duke of Leinster at Waterstown, near Maynooth, and now out of place, and at work in the Hammersmith Nursery. It was grown in soil trenched to the depth of 10 ft., and mixed with rotten leaves, sand, and a little spent hot-bed dung, and placed on a stratum of small stones, as drainage, 1 ft. thick. The cutting, about 3 in. long, was planted in Feb., 1835, and the plant taken up on Jan. 8. 1837. The upper part of the root is more than half an inch in diameter, and the lower

extremity about half an inch. It was broken off by accident in taking up; otherwise there can be no doubt it would have been at least 10 ft. in length, before it began to ramify in consequence of reaching the drainage. — *Cond.*

Art. III. *Obituary.*

Died, Jan. 24., in the sixty-seventh year of his age, *Joseph Sabine, Esq.*, F.R.S., L.S., H.S., &c., for many years honorary secretary to the London Horticultural Society, and a well-known amateur of botany and gardening. Mr. Sabine was brought up to the bar; but, shortly after he had begun to practise, he was appointed by government one of the inspectors-general of the assessed taxes, at a salary of 600*l.* a year, with travelling expenses and other emoluments. This office he retained till 1835, when he was put upon the retired allowance, said to be about 350*l.* per annum. In 1810, Mr. Sabine joined the Horticultural Society, of which he was made honorary secretary on May 1. of the same year, Richard Anthony Salisbury, Esq., having resigned. The accounts of the Society were, previously to that time, in a state of great confusion; and Mr. Sabine having restored them to order, the gold medal of the Society was awarded to him in June, 1816. Mr. Sabine, about this time, took a decided lead in the management of the Society's affairs; and, by his exertions, greatly increased the number of fellows, as well as led to the establishment of the Society's Garden, first at Hammersmith, and afterwards at Chiswick. In short, the flourishing state of the Horticultural Society, from 1816 to 1828, and all the immense good that it effected during that interval of time, are mainly to be attributed to the activity and ardour of Mr. Sabine. To him we owe the admirable collection of fruits in the Horticultural Society's Garden, unequalled in the world; and the best kinds of which are gradually becoming substituted, all over Britain, for the inferior sorts previously in cultivation; and to Mr. Sabine it may also be said that we owe all the fine plants sent home by Douglas, and other collectors sent out by the Society, as these collectors were all sent during the time he had the directorship of it. This statement we consider to be due to the memory of Mr. Sabine. The defective part of his management of the affairs of the Society was, his being too secret and despotic; in consequence of which, he could not avail himself of either the advice or the corrections of his colleagues in the Council, or of other members of the Society. In short, as it has truly been said, he was, during the time specified, not only the secretary, but the president, council, and even the head gardener, of the Society. His ardour led to enormous expenses, which the funds were inadequate to defray; and, in consequence, the Society became deeply in debt. The amount of this debt, which the Society had been gradually incurring, was concealed by Mr. Sabine (see Vol. VI. p. 236.), till it burst upon the fellows like a thunderbolt in 1830, and had nearly occasioned the dissolution of the Society. It may be necessary here to state, for the sake of those persons who did not know Mr. Sabine's personal character, that no one ever entertained the most distant idea of any part of the debt having been incurred by himself individually; on the contrary, he not only gave up every spare moment of his time to the Society without receiving any remuneration, but, we believe, even incurred expenses on its account. Mr. Sabine was ever a warm friend to practical gardeners, many of whom, now filling eminent situations, were indebted for them to his recommendation. After Mr. Sabine ceased to be honorary secretary of the Horticultural Society, he became an active member of the Zoological Society, and was the means of greatly increasing its collection of ornamental plants in the garden of that Society, in the Regent's Park.

"Mr. Sabine's remains were interred, Feb. 1., in the Cemetery in the Harrow Road, attended by his nephew, Capt. Brown; Capt. Bowles, R.N.; Dr. Beattie; and Edward Barnard, Robert Brown, E. S. Hardisty, and Thomas Goode, Esqrs." (*Lit. Gaz.*)

THE

GARDENER'S MAGAZINE,

APRIL, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *Suggestions for the Improvement of Kensington Gardens; and which are applicable, also, in a greater or less Degree, to Hyde Park, the Green Park, Regent's Park, and Greenwich Park, and to Parks and Pleasure-grounds generally.* By the CONDUCTOR.

HAVING resided during the last twenty years in the immediate vicinity of Kensington Gardens and Hyde Park, it will not be wondered at that we feel an interest in whatever changes may be going forward in these places of public recreation. For upwards of a year past, we have wished to say something on the alterations which have lately been making in Kensington Gardens; but we have never found time to do so; and, though we have now resolved to make the attempt, we cannot enter into the subject as we could wish. We must therefore confine ourselves to giving a few crude hints, which, we hope, will receive the consideration of the Commissioners of Woods and Forests before they commence planting; and, more especially, before they commence planting in Kensington Gardens the mass of common forest trees now standing in nursery lines on the north-east margin. We intend to do this, because, even if our hints should fail in producing all the effect we wish, we feel confident that they will be useful to readers of this Magazine, and to gardeners and planters generally; and this will be a sufficient compensation to us for the time occupied in making them, and for their printing and publication.

We shall give the hints under separate paragraphs, as they occur to us, without much regard to their connexion.

1. The *Scólytus destrúctor* is making extensive ravages on the elms, and some hundreds of trees have, on that account, been cut down; besides those, amounting to above 100, which were blown down by the hurricane of Nov. 29. 1836. Nine tenths of the remaining elm trees in the gardens will, in all probability, also fall in a year or two; considering that, relatively

to the soil in which they grow, they have arrived at maturity, and, indeed, have most of them begun to decay.

2. A mode of deterring the scolytus will be found detailed in the *Arboretum Britannicum*, p. 1390., and in a future page of this Magazine; but the best practical method, in our opinion, to guard against this, or any other insect that attacks trees in such a scene as Kensington Gardens, and to limit the extent of their ravages where they have made an attack, is, to introduce a number of different species of trees, natives of different countries and climates; in short, to render the garden an arboretum; avoiding, however, all trees not decidedly hardy and of vigorous growth in the climate of London; and all that require peat earth, any soil difficult to procure, or any situation either very moist or very dry.

3. All the trees ought to be planted in pits of prepared soil. These pits ought to be 4 ft. or 5 ft. deep, and not less than from 12 ft. to 16 ft. in diameter; or to occupy from 16 to 20 superficial yards of surface. The pits should neither be round nor square, but star-shaped, or cross-shaped; that is, either of such a form as would be produced by placing one equilateral triangle on another, the points of one triangle being opposite the middle of the sides of the other; or as would be produced by placing two parallelograms across each other at right angles, so as to form a Greek cross. The object of departing from the square or round form is, to introduce the growing fibres of the trees into the firm and poor soil by degrees, and not all at once, as would be the case were the pits made of square or circular forms, in the usual manner. The trees, thus planted, would also be better able to resist high winds, as they would take a firmer hold of the soil. When a tree is planted in a round or square pit, dug in hard bad soil, it is in much the same situation as if its roots were confined in a pot or tub. The dovetailing, so to speak, of the prepared soil and of the moisture which it will retain, with the hard impenetrable soil by which it is surrounded, will gradually prepare the latter for being penetrated by the roots of the trees, and prevent the sides of the pit from giving the same check to these roots which the sides of a pot or tub do to the plant contained in it.

4. The earth being entirely taken out of the pits, ought to be mixed with from a quarter to a half its quantity of good loamy rich soil, and then the whole returned to the pit; and, wherever more than one fourth part of new soil is added to that taken out of the pits, a corresponding quantity of the worst of the soil dug out of them ought to be removed, in order that, when the mixture is thrown into each pit, and heaped up on it, it may contain exactly one fourth part more soil, and no more, than was taken out of it. By these means, the pits, when filled up,

will at first form knolls, all of the same height, which will ultimately all sink down to the same height, or about the fifth part of the depth of the pit above the general surface. After the earth, with its accession of good soil, is returned to the pit, it should be formed into a flattened cone, with the sides towards the base rather concave than convex, in order that they may join easily into the general surface. The soil not returned to the pits may be used for filling up inequalities in different parts of the grounds; or, where it is chiefly gravel, it may be screened for supplying stones for mulching the trees to be planted. On the centre of the flattened cone, in a shallow basin of 3 ft. in diameter, the tree ought to be planted, watered, and mulched with small stones, or chopped turf. The hill, or cone, should be sloped down all round, and sown with grass seeds; among which, however, there ought to be no seeds of clover, or of any taprooted plants. In a very few years, hills of this kind will sink down so as to leave their apex, on which the tree is planted, not more than 18 in. higher than the general surface; and in ten years, not above half that height; in consequence of which every tree will rise out of a gently elevated base, as trees are found to do that have sprung up naturally on open commons, from the rising and swelling of the collar; and, indeed, as all trees whatever do that look well; there being no such thing, either in nature or in refined art, as the shaft of a tree rising abruptly out of a flat surface, and appearing no thicker at its base than it is higher up. Such trees are, however, very common in pleasure-grounds, from the neglect of keeping their roots considerably higher than the general surface, at the time of planting. Wherever a tree is planted in a pit that has been dug 3 ft. or 4 ft. deep, or even half as much, and, after planting, and even watering and treading the ground about it, has been brought to a level; in a few years afterwards, by the sinking of the soil of the pit, the stem of the tree will stand in a hollow. As this hollow, at least in all ornamental grounds, will be filled up from time to time by the gardener, the result is, that, in a few years, the collar of the tree, instead of being above the surface rather than under it, is buried in firm soil to the depth of 5 in. or 6 in., or perhaps a foot. This greatly retards the growth of all trees whatever, and occasions the death of many kinds; for example, the pine and fir tribe. It has, also, the unnatural revolting appearance above mentioned. It is always better to plant a tree so high, that, after the ground on which it is planted has become consolidated by time, the knoll should require lowering by scraping away some soil from the collar of the tree, so as to leave a portion of the main roots bare, than that it should require raising by adding soil there. This important point ought never to be lost sight of by planters, and especially

by those who plant single trees or scattered groups for ornament.

5. A plan of the gardens, on a large scale, with the situation of every existing tree marked on it, ought to be made out; and on this plan the situation of all the pits for the proposed new trees ought to be marked, and the kinds of trees to be planted in them determined, before a single pit is dug. Each pit ought to be numbered on the plan, and to each number a page in a small 8vo book ought to be devoted. In each page, the superintendent will insert the history, or journal, of the pit, and of the tree planted in it; which, of course, can only be done as the work is performed, and in the course of several years. The first record will be of the price contracted to be paid for digging out the soil of the pit; the next, for removing a certain proportion of the worst of this soil; the next, for supplying the requisite portion of good soil; the next, for mixing the soils together on the outside of the pit; the next, for throwing the soil in, and so on; including the purchase of the tree to be planted; its name, which ought to be written on the plan, as well as on the top of the page containing its number in the 8vo book; the date of planting, fencing, mulching, &c. In the execution of the operations, we would have them all subdivided as much as possible, and all of them, except the planting of the trees, executed by separate contracts, and not by day work; while, after the execution of every particular operation, the superintendent should ascertain that it had been properly performed. Thus, after the soil was thrown out of the pit, before proceeding to separate the bad soil from the good, the pit should be examined, to ascertain that it had been dug to the proper depth, &c. Then, again, after the bad soil was separated from the good into a heap or heaps by itself, before being taken away, these heaps ought to be examined, and the point determined, whether or not the proportion of bad soil had been separated, or not, and so on. If the pits were let to be dug out, the bad soil taken away and good brought, mixed, and filled in again, at so much, the work, in most cases, would not be half done, and the result contemplated would not be attained. On the other hand, if the operations were executed by day work, they would be more expensive and tedious in the performance; and, besides, as a general principle in the execution of all kinds of work, whether of the hands or of the head, nothing ought to be done by the day that can be done by estimate. Day work, even in common labourers, has a tendency to check all exertion, and reduce the man of strength and skill to the level of him who has very little of either.

6. The mud taken out of the canal in Kensington Gardens, and recently used in filling up the old gravel pit near the Bays-

water entrance, amounting to some thousands of loads, would, when dry, have formed the best of all soil for mixing with that taken out of the pits; and there would, it is believed, have been a sufficient quantity for all the pits required in Kensington Gardens, which we do not think would be more than from 600 to 800. Such an immense mass of soil, so valuable, that it could not be procured for money, instead of being buried in a pit, where, as soil, it can be of no use whatever, ought rather to have been used as a top dressing over the whole of the gardens.

7. If the mode of planting suggested should be adopted, it would be worth while to take all the rich soil just mentioned out of the old gravel pit, and plant the pit with hollies, or with *Quércus Ilex*, either of which evergreens would soon turn it into a thicket, and render it impossible for any one to know that a pit was there; but, if it is absolutely determined that this pit shall be filled up with earth, then let the bad earth taken out of the pits be substituted for the good soil, no more good soil being taken out of the pit than what there was bad soil to replace it with. This would leave the pit as full as it is at present, and, at the same time, save some thousand loads of rich compost. For our own part, we should never think of filling up a chalk or gravel pit, or stone quarry, even in Kensington Gardens, though there were a dozen there, considering such accidental inequalities of surface as the best of all situations for displaying gardening to advantage. We may refer to what Addison said in the *Spectator* on the gravel pits in these grounds, which were turned into parterres by London and Wise; and to the chalk pit turned into a garden by the celebrated Whately, the author of *Observations on Modern Gardening*.

8. Among the kinds of trees planted, there ought to be a number of American oaks, cedars, pines, and firs; and, as of some of the species of these trees only small plants can be procured in the nurseries, they should, as soon as planted, be fenced round with wicker hurdles; not only to protect them from external injury, but to shelter and shade them. Instead of a triangle formed by three square wicker hurdles, cylindrical, or tube-like, hurdles may be woven by the hurdle-maker, and placed over each plant; which will have a very neat appearance, and will not only effectually screen the plants from danger, but promote their growth. Larger plants may either have a handful of thorns tied round them, as in the Regent's Park; a few laths applied close to their stems, and made fast there by wire, to be annually examined, and an additional lath put in where requisite; or, where cattle, horses, or deer are to be admitted, as in Hyde Park, the admirable method of Mr. Lawrence, described in a future page, may be resorted to, as the cheapest and very best tree guard hitherto discovered.

9. By selecting them from different nurseries, within a few miles of London, plants of all the kinds of trees required may be had of from 8 ft. to 10 ft. high, or upwards, with the exception of some of the pine and fir tribe, and of some of the American oaks. In planting such trees, the French method of heading the tree down, or closely cutting it in, will require to be borne in mind, rather than the method of keeping on the entire head, recommended by Sir Henry Steuart; which, though it will succeed in the cold moist climate of Renfrewshire, where Sir Henry lived, never will answer in the climate of London, or, indeed, in most parts of England, on account of the greater warmth and dryness of the air, and consequent increased evaporation from the leaves. (See the Brussels practice, described in Vol. II. p. 226. and p. 461., and Vol. X. p. 8.; and also in the *Arboretum Britannicum*, p. 1383.)

10. The circumstance of being obliged to plant young trees among the old trees in Kensington Gardens will add greatly to the variety and interest of the scenery; for though, in grounds laid out in the geometrical style, and especially in the case of straight avenues, it is desirable to have all the trees of the same age and magnitude, yet the reverse of this is the case in planting with a view either to the gardenesque, picturesque, or fac-simile imitation of natural scenery. In self-sown forests, there are trees of all ages; and, though in gardening it is not desirable to produce fac-simile imitations of such forests, yet those characteristics of them which are most productive of agreeable associations ought to be kept constantly in view.

11. Though the most rapid mode of drawing up trees with a view to profit is to plant thick, especially in exposed situations; yet the very reverse of thick planting should be followed where beauty is the object, and the climate comparatively mild. No beautiful wood was ever yet seen, in which the trees did not stand at such a distance apart as to show their individual shapes to a person walking through the wood; and the natural shape of every tree ought to be obvious after the plantation is of four or five years' growth; thinning being resorted to, wherever equality of height, or the meeting of the branches, has a tendency to obliterate it. It is only by this degree of thinness that the fine tufted appearance, which some woods have at a distance, can be produced; an appearance the very reverse of what is exhibited by the two central masses of trees in Kensington Gardens, when looking eastward from the palace directly across the basin of water.

12. In order to preserve as many full-grown trees as possible in Kensington Gardens, the masses will require to be considerably thinned, so as to produce a more vigorous growth in those trees that are left. For the same object, all such trees as are

allowed to remain, having no longer the shelter of those taken away, will require to have their tops lightened by severe pruning.

13. The thinning of these masses will also be required, in order to make room for the pits to contain the new trees which it is intended to introduce to a certain extent in the masses, no less than where the old trees have been felled or blown down.

14. In order to encourage the growth of the trees in the masses, and also the growth of all the other trees in the garden, the surface of the ground ought to be top-dressed with a rich compost; beginning at those places where the soil is poorest, and where the trees have most need of assistance. Next to admitting light and air to the existing trees, there are no means whatever that will so effectually add to their strength and beauty as enriching the surface soil: it will add greatly to the strength of the fibrous and slender roots which run along the surface, and, in a few years, will change them into ramose roots, which will have sufficient strength to enable the trees to resist storms, even though the hearts of the trunks, and all the larger roots that are deep in the soil, should be completely rotten. A new coating of wood will be deposited on the outer surface of the trunk, however rotten it may be in the inside, provided the bark be uninjured; by which means the tree will not only be strengthened and enlarged, but its period of duration greatly prolonged. The vigour thus infused into the trees will enable them, in a great measure, to resist the attacks of insects. The grand causes of the diseases and the death of trees in artificial plantations are, the want of organic nourishment, and the want of water, light, and air. Were these duly supplied for ever, it is difficult to conceive, from the physiology of a tree, how it could die otherwise than by accident. Nourishment is supplied by top-dressing, and light and air by thinning. Water is not so easily supplied; and, for want of this, many trees, after they have attained a certain size above ground, and filled the soil in which they grow with their roots, die, in consequence of the evaporation by the leaves being greater than the absorption of moisture by the roots. It is not easy to supply water to a wood or grove of full-grown trees, otherwise than by intersecting the ground with very deep and wide drains, filling these half full of loose stones, and then connecting the ends of the drains with a supply of water. This mode may be considered too expensive for general practice, except in scenes of limited extent; and, therefore, the principal thing is to prepare the soil to the depth of 6 ft. or 8 ft., or even 10 ft., before planting the trees; for, as prepared soil acts like a sponge in retaining the water, so this would add greatly to the size of that sponge, and thus prevent a greater portion of what fell from the atmosphere from sinking into the subsoil, or running off along the surface; and, in either case, being lost.

15. No new tree ought to be placed nearer to any other tree, either existing or to be planted, than 20 ft.; even in places where it is intended to produce a mass, either for its own sake, or for concealing a boundary fence or other object. Trees, whether of the small kind, such as thorns and laburnums; or forest trees, such as oaks and cedars; will, in the climate of Kensington Gardens, when planted in pits prepared as above directed, grow so rapidly, that, even when planted 20 ft. asunder, their branches will meet in from seven to ten years. An exception to the above rule, of never planting nearer than 20 ft., is, when picturesque groups are to be formed; in which case two trees of different kinds may be placed in the same hole, or within 2 ft. or 3 ft. of each other; and sometimes with a third tree, or with a strong-growing shrub or shrub-like tree; as with a holly, thorn, box tree, yew, &c. In cases of this kind, the pits should be made proportionately large, and the general shape may require to be varied accordingly.

16. Where belts or masses are to be planted, low-growing trees, such as thorns, hollies, ilexes, &c., ought to be interspersed among lofty-growing trees; in consequence of which, little or no thinning will become necessary at any future period, unless it should be desired to turn a wood into an open grove.

17. In fixing on the situations for single plants and scattered groups of young trees, care must be taken not to destroy what is technically called "breadth" of surface, by distributing the trees equally over the ground, as is done in the Regent's Park. All the trees planted must be thrown into constellations, or groups; for even the masses, considered relatively to the whole, are only to be looked upon as groups of a larger size. Some attention must, also, be paid to the native localities and the habit of growth of different trees: for example, a cedar of Lebanon should be planted in an open rather elevated situation, where it will have room to extend its branches on every side from the ground upwards. Trees with graceful drooping branches ought also to be placed where they will exhibit their characteristic features; and such trees as the *Quércus palústris*, the most graceful of all oaks, whether European or American, and of which there are abundance of young plants for sale from 10 ft. to 15 ft. in height in Loddiges's Nursery, ought not only to have room to display their beauty, but to be placed in situations where the soil is rather moist than dry.

18. If all the preceding directions were properly attended to, and trees of not less than five or six years' growth selected for planting, except in the case of those of the pine and fir tribe, and some sorts of oak, their growth would be such, that, in ten years from the time of planting, they would be from 30 ft. to 40 ft. high. If any of our readers should doubt this, we refer

them to the Horticultural Society's Garden, in which they will find many species of trees that have advanced in growth in rates proportionate to those mentioned. Of course, we do not mean to state that low trees, such as hollies, thorns, laburnums, &c., which naturally do not grow above 25 ft. or 30 ft. high, will exceed that height in consequence of the treatment we recommend; which would be by no means desirable, since it would change the character of the trees; but, simply, that large trees will grow with the rapidity we have mentioned.

19. The greatest care must be taken not to mix the new species of trees indiscriminately; because, as Sir William Chambers and Sir Uvedale Price have long since shown, the effect of that mode of mixing, let the number of species be ever so great, is to produce monotony, instead of variety. One genus of deciduous tall trees, one genus of deciduous low trees, and one of evergreen trees, whether large or small, ought always to prevail in one place; in order that the impression made on the mind of the spectator, by the view of that place, may be different from the impression of any other place or part of the scene.

20. It appears to us much to be regretted that no evergreen trees have been introduced among the scattered trees planted, of late years, either in Hyde Park or in the Regent's Park. We can conceive no reason for this, except the extra expense of enclosing, which, of course, a nurseryman who undertakes to plant by contract will not do, unless by specific agreement. We would have cedars, pines, and firs interspersed, throughout these parks, together with the ilex, the new Lucombe, and other evergreen oaks. The ilex is one of the most rapid-growing and hardiest of oaks when properly treated; and, in Cornwall and on the sea coast, it is planted to shelter and draw up the common oak, as the Scotch pine is, with so much success, in the government plantations in the New Forest.

21. All the yew trees and hollies, in Kensington Gardens, which had branched down to the ground, and assumed the character of shrub-like trees, and all the ancient yew hedges, which had been allowed, for many years, to grow without being clipped, together with many of the deciduous shrubs, have been removed; so that now the eye ranges every where among the stems of the trees: nothing is concealed, and the whole extent of the gardens is seen to the boundary fence from almost all the principal walks. This, it is reported, has been done in order to prevent offences against decency from being committed in the concealed places. It seems singular that these gardens should have existed with all the evergreens which produced these concealed places, for upwards of a century, and that now (when the people are allowed by all parties to be much more civilised and refined than heretofore) it becomes necessary to remove them. In our

opinion, the removal of these evergreens and hedges was an act not warranted by a due regard for public ornament; because there can be no doubt that a few additional policemen or constables would have more effectually prevented the commission of these offences than the means resorted to. Besides, the removal of all but the large trees from these gardens seems equivalent to saying that they shall not be ornamented with groups of flowering and evergreen shrubs, as public gardens are on the Continent. We hope, however, that they will one day be interspersed with groups of flowering and evergreen shrubs, and with beds of flowers, intersected with gravel walks, and ornamented with statues, vases, fountains, and models of celebrated ancient buildings; and, at the same time, that they will contain some fac-simile imitations of wild nature, where the hand of art will not be suspected to have been at work, except by the artist. A fine effect was produced by a hayrick, which, some years ago, used annually to be built in a glade, in one of the larger masses of wood; and which glade and rick unexpectedly occurred when passing along a footpath. The rambler in the gardens might be decoyed by a similar path through some other thicket to an immense gravel pit planted with thorns, briars, brambles, elder bushes, with a small piece of water in the bottom shaded by alders; the whole being, apparently, in a state of utter neglect. Such violent contrasts to highly refined art can only be sparingly introduced; but every one must feel that they are not without a very important use.

22. We have been for several years past (see Vol. I.) recommending, as a great public improvement, the removal of the wall on the north side of Hyde Park and Kensington Gardens, and also on the south side of these gardens, and the substitution of an open iron railing. This has, in part, been effected, as far as respects Hyde Park; and the improvement is so great, that we cannot but hope it will soon be extended to Kensington Gardens. Another great improvement would be the addition of the Royal kitchen-garden, and of the field lying to the south of it, to the public gardens; which, of course, implies the removal of a wall 25 ft. high, which forms the northern boundary to the kitchen-garden, and which, by shading the public road, obstructing the free current of air, and shutting out all view to the south from the houses on the north side of the road, is, in fact, the greatest public and private nuisance between London and Uxbridge. The kitchen-garden, whatever it might have been thirty years ago, can, at present, be of little use to the Royal family; because everything grown in it, even the commonest vegetables, must be poisoned by the smoke and soot produced by the houses, which surround it in dense masses on every side.

23. In justice to that part of the public who walk on foot,

there ought to be a public footpath made directly across these gardens, from the Bayswater road to the Knightsbridge road; entering at the middle point between Cumberland Gate and Silver Street, Kensington Gravel Pits, and coming out at the middle point between Hyde Park Corner and Kensington church. The distance between these extreme points, on both roads, is nearly two miles; so that a person living at the middle point on the one road wishing to go to the middle point on the other, as he cannot go across the gardens, is obliged to walk two miles and a half, instead of half a mile, which is the distance directly across. No appropriation of property, either public or private, can, in our opinion justify such a nuisance. To prevent the path from interfering with the appearance of the gardens, it might be sunk to the depth of 8 ft., with the sides walled, the bottom paved, with drains on each side, and the top covered with a horizontal iron grating. As the direction of the path would be north and south, the sun would shine into it every day in the year; and this, with small side drains, connected with proper main drains, leading to the public sewers, would render the path dry and comfortable at all seasons; while a few lamps, and a policeman, would render it as fit for use by night as by day. If some such plan as this is not adopted, then there ought to be doors at the middle points above referred to, in order that persons might at least get directly across in the day time.

24. One great use of evergreen trees and shrubs in garden scenery is, the shelter which they afford to birds in the night time. There is abundance of suitable food for singing birds in the gardens and parks of the environs of London; that being furnished by the insects which live almost always on deciduous trees, and by their buds, blossoms, and fruit; but, without evergreen trees or shrubs, there is no warmth or shelter for the more delicate birds in the winter season, and in the night time; for birds, no more than other animals, can live on food alone. If evergreen trees were placed in Hyde Park, the Regent's Park, and the other parks, and bird-catchers prevented from pursuing their calling within twenty miles of the metropolis, the number of singing birds would be greatly increased all round London; and myriads of those insects which are now so injurious to suburban gardens would disappear, because their larvæ would be devoured by the birds. It is highly probable, also, that, under such circumstances, several foreign singing birds, or birds remarkable for the beauty of their plumage, might be acclimatised; and the woods of Kensington Gardens might one day resound with the notes of the campanero, as they did a few years ago with those of the woodpigeon. What has been already done in St. James's Park, in acclimatising foreign aquatic birds, appears, at all events, to justify us in suggesting the idea.

25. We have said nothing of certain alterations in the walks, and of the formation of several new walks, which, we think, would be great improvements to Kensington Gardens, or of various other matters connected with them: our great object, at present, being to prevent the ground to be planted from being filled with the common stuffing of plantations, planted in the common manner, twenty times too thick, and without any preparation of the soil, further than that of common trenching, to the depth of 18 in. or 2 ft.

The following figures are intended to illustrate some parts of the preceding remarks: —

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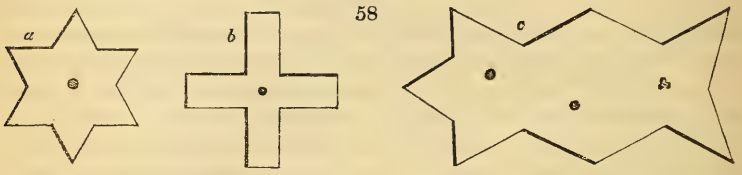

Fig. 58. *a* shows the plan of a stellate pit; *b*, a cruciform pit; and *c*, an irregular pit for a group of two trees and a shrub.

Fig. 59. The earth taken out of the pit returned to it, after being mixed with a proper proportion of rich compost or good soil.

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Fig. 60. The soil formed into a flattened cone, with concave sides, having a shallow basin at top, on which the tree is planted, and mulched with small stones.

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Fig. 61. The tree, after being ten years planted, with the ground under it consolidated, and sunk as low as it ever will sink.

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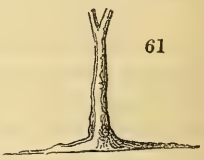

Fig. 62. A group, consisting of two trees and a shrub, showing the result of the proper mode of planting them.

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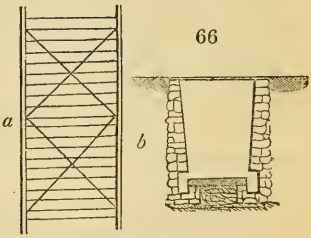
Fig. 63. A tree planted in the mode usual in gardens and pleasure-grounds, the surface round it being made level, or nearly so.

Fig. 64. The appearance of the surface five or six years afterwards, unless soil has been added as it sinks, so as to keep it up to the level.

Fig. 65. The result ten years after planting, showing the collar (see p. 147.) buried 5 in. or 6 in. deep in the soil; thus

greatly retarding the growth of the tree, and ultimately bringing on premature decay.

Fig. 66. *a*, section of the proposed sunk footpath between Bayswater and Knightsbridge; entering at the middle point between Cumberland Gate and Silver Street, Kensington Gravel Pits, on the one road, and coming out at the middle point between Hyde Park Corner and Kensington church on the other road: *b* shows a vertical profile of the path, covered by the horizontal iron grating. Where this path is crossed by gravel walks on the surface, the gravel, and a margin of turf on each side of it, can easily be supported by a flat brick arch, or a trough of cast iron.



Bayswater, March 5. 1837.

ART. II. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 2. The Natural History of a WEEVIL which is very destructive to Collections of succulent Plants.

THE Linnæan genus *C*urcùlio comprises a very numerous assemblage of beetles, whose habits are entirely herbivorous, and which are distinguished by having the front of the head lengthened into a muzzle or snout, varying in its length and thickness in the different species; and by the antennæ being generally elbowed at the extremity of the long basal joint. The two Linnæan genera *B*rùchus and *A*ttélabus belong to the same natural group to which the modern sectional name Rhynchóphora (or rostrum-bearers) has been aptly applied by Latreille, divisible into numerous subfamilies and genera. These insects are known by the common name of weevils; and amongst their number are to be ranked some of the most destructive of the insect tribes. Of these, the more obnoxious are, the well-known corn weevil (*Calándra* granària), the rice weevil (*Calándra* oryzæ), the sugar weevil (*Calándra* sácchari), the pulse beetle (*B*rùchus granàrius), the nut weevil (Balanìnus nùcum), and the vine

weevil (Rhynchites Bácchus); a species which, although very rare in England, is but too common in the vine districts of France and Germany.

The insect whose history I propose to detail in this communication belongs to the same class and order as the turnip flea-beetle (p. 100.), and to the

Family, *Curculiónidæ Leach.* (So named from the Linnæan Genus *Curcùlio*, to which it is equivalent.)

Genus, Otiorhýnchus *Germar.* (So named from two Greek words, *ōtion*, an ear, and *rhugchos*, a rostrum; expressive of the form of the rostrum, which has a lateral appendage on each side at the extremity.)

Species, Otiorhýnchus sulcàtus *Fabricius.* (*Systema Eleutheratorum*, ii. p. 539.: Stephens, *Illustrations of British Entomology; Mandibulàta*, vol. iv. p. 114.) *Curcùlio* sulcàtus *Linnæus.* Specific name expressive of the sulci, or grooves, upon the elytra.

Fig. 67. G is a magnified view of this insect; and H the natural length.

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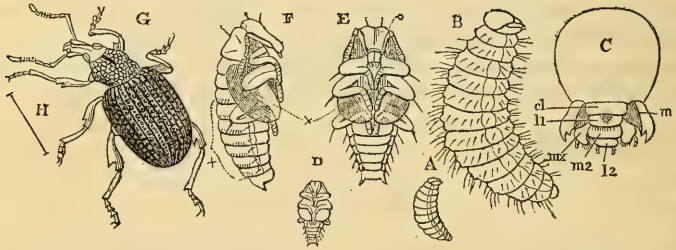

In the month of December, 1827, my lamented friend, the late A. H. Haworth, Esq., so well known as the author of many works upon succulent plants, lamented to me the numerous losses which he annually sustained amongst these plants by some unknown enemy, which caused their death, especially during the mild winter months, and by which means many unique species had been lost to his collection. On going into his green-house, and examining, also, various plants in the open air, we found that, in several pots containing plants of a species of *Sèdum*, the latter were evidently in a dying state; and, on taking up the plants, we found a quantity of footless grubs in each pot, at a little distance beneath the surface of the earth, which had eaten that part of the root close to the surface, leaving the lower part, as well as the leaves and stem, untouched. At the same time, we also found eggs and larvæ of a smaller size. This larva (*fig.* 67. A, natural size; and B, magnified) is nearly half an inch long, of a dirty white colour, without any legs; of a thick fleshy substance, with the body slightly curved, and rather attenuated towards both extremities. It is of an uneven surface: its sides are furnished with fleshy tubercles; and along its belly and back are also placed small tubercles, which evidently serve in pro-

gression, and are furnished with fine bristles; the body is also sparingly clothed with hairs, thus differing in several respects from the well-known grub of the nut weevil. The skull (c) is round and horny, smaller than the following segment: the eyes and antennæ appear to be entirely obsolete: the clypeus (cl) is transverse, as well as the upper lip (l 1); the latter is furnished in front with a row of hairs, and is thickened in a triangular manner in the middle. The mandibles (m), which are the chief instruments with which the destruction of the plants is effected, are horny, and furnished at the tip with two teeth, which are, in fact, merely portions of the jaw, and not separate appendages, as in the higher animals; the lower jaws, or maxillæ (mx.), and the lower lip (l 2), are considerably advanced, so as to extend beyond the upper lip; the maxillæ are fleshy, with a rounded internal lobe, and a single, apparently two-jointed, palpus; the mentum (m 2), or basal part of the lower lip, is transverse, and larger than the lip (l 2), which is furnished with a pair of minute two-jointed palpi; the hairs on the segments of the body seem disposed in transverse series, which are probably serviceable in motion.

Bouché (*Naturgesch. Garten-Insekt.*, p. 28.; and *Naturg. der Insekt.*, p. 201.) informs us that, in the neighbourhood of Berlin, this larva is found, in the autumn and winter, at the roots of plants belonging to the genera *Saxífraga*, *Tróllius*, &c.; which it gnaws round the upper part of the roots, and so causes the plants to perish. It was especially abundant in the spring of 1832; at which period, the destruction which it caused in plants in pots was very great.

Some of the larvæ which I obtained from Mr. Haworth were placed by me in a pot, which I endeavoured to keep in a situation as nearly agreeing with that in which they were found as possible. About the middle of the following May, I examined these insects, and still found them to be in the larva state; but, on again examining them a fortnight afterwards, all had made their escape except one; one of the perfect insects being still on the outside of the gauze covering of the pot, in which a hole had been made, evidently by the insects on arriving at the perfect state. On the 8th of June, the remaining larva had turned into a white pupa (D, natural size; E, ditto magnified, seen with a ventral aspect; and F, ditto seen laterally). I did not observe any appearance of a cocoon, the earth alone being scooped into an oval cell, the inside of which was very smooth. Bouché also states that the larva forms no cocoon.

This pupa is of an oblong form, and exhibits all the limbs of the future beetle (belonging to that kind of pupa which is termed *incomplete*). The wing-covers (E and F ×) are of a small size, and rest over the breast, leaving the back exposed; the head is also

folded upon the breast, as well as the legs, each being enclosed in a distinct sheath; the hind legs lying under the wing-covers, with the tips of the thighs and of the tarsi alone exposed; the head is depressed in the middle, with two short hairs; the basal joints of the antennæ (E ◦) are laid along the sides of the rostrum, with the terminal points forming an acute angle; the tips of the thighs of all the legs are furnished with a strong bristle; the abdomen is gradually narrowed to the extremity, which is truncated with two lateral points; each of the dorsal segments of the abdomen (F ×) is furnished at its posterior margin with a row of short strong spines, which are of great service to the pupa, by affording so many points of resistance to the insect in its movements, which are, however, but few; the sides of the abdomen are furnished with a row of lateral fleshy tubercles. Bouché states that this pupa descends 3 in. or 4 in. below the surface of the ground to undergo its transformation; but I do not think that mine went more than 1 in. deep. The same author states that the period occupied in the pupa state is fourteen days. On June 19., my pupa appeared to have undergone no change, being still quite white. In three days, however (i. e. on June 22.), the insect had assumed its perfect form, appearing as in *fig.* 67. G (magnified, H being the natural length of the weevil). At this period, the insect was of a rather pale pitchy colour, owing to its recent disclosure; but its natural colours are thus described by Mr. Stephens: —

"*Black;* head finely punctured, pubescent, with an impression between the eyes; rostrum rugose-punctate, with a deep broad channel; thorax with an obsolete dorsal groove, slightly glossy, with numerous thickly planted tubercles throughout, and some scattered pale ashy hairs; scutellum black; elytra somewhat deeply sulcate, with the interstices and sulci very ruggedly tuberculate, and irregularly spotted with depressed pale ferruginous hairs; legs rather long, with the femora obtusely dentate; antennæ piceous." The perfect insect varies in length from $\frac{1}{3}$ in. to $\frac{1}{2}$ in.

This description, with the accompanying figure, will enable any person having collections of succulent plants to detect the beetle, in the month of June, lurking about the pots or plants of this kind; and, indeed, it does not appear to me impracticable to train children to look over the plants, and destroy the insects as soon as caught: of course, care must be taken to destroy the insect as soon after it has attained its beetle form as possible, otherwise the great end of its existence, that of impregnation and deposition of the eggs, will probably have taken place; as it is to be observed that it is only in the grub state that the injury to the plants is committed, the perfect insect being quite innocent. That this is a generally dispersed insect must be evident from

Mr. Stephens's observation: "Very abundant in gardens within the metropolitan district. In my own garden (South Lambeth), and at Hertford, I have seen the insect in great abundance." Should the insects succeed in depositing their eggs, it will be advantageous, at the end of the autumn, to examine the plants carefully, and to take up such as appear at all sickly, in order to examine their roots, and destroy such larvæ as may be found about them in a young state. If this be neglected until the middle of the winter, experience has shown that the plants will be destroyed. Several other species of the same genus are similarly destructive. R. Patterson, Esq., of Belfast, has forwarded to me specimens of Otiorhýnchus vastàtor, which "destroyed a vast number of flowers in the Botanic Garden of that town, in June, 1830, by ascending the stem at night, and cutting it through."

The Grove, Hammersmith, March 1. 1837.

ART. III. *Plan of the Grounds of Chester Holme Cottage, laid out by Mr. George Harland, and communicated by him.*

THE Cottage of Chester Holme (*fig.* 68.) was the residence of the late Rev. Anthony Hedley. It is situated at the

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head, or opening, of a deep rocky glen, which runs southward; the bottom of which is washed by the Chinely Burn, which falls from many a "shelvey rock" in its passage to the River Tyne, about five miles east from Haltwhistle. This opening gradually expands to a level green holme, at the north extremity of which

two streams meet, called Craig-Lough, and Brookey Burn. These, after being united, take the name of Chinely Burn, as above stated; and this burn runs down the west side of the holme, past the foot of a steep green bank, on a level area, at the top of which is a famous Roman station, called Vindolana, having a rapid declivity to the water on the north and east sides. The cottage is wholly built of the stones from this ancient station, and without any dressing tool being applied to them. The burn, after leaving the foot of this station, continues on a southerly direction; when, suddenly turning eastward, it approaches the house, and, just opposite to it, forms a beautiful natural cascade, which is seen to great advantage from some of the principal windows. It here turns at right angles, and runs southwards, down the west side of the grounds, over a complete bed of shelving rocks, and under a rustic bridge at the south extremity; and, a short way below, it is turned aside westward by a very high rock, which is crowned with hanging woods, and produces a fine effect viewed from the house. On the east and south-east rises, with rapid ascent, Borcum Hill, the lower part of which is covered with hanging woods, with here and there the strata of sandstone cliffs protruding. The top of this hill is covered with heath, and there is a pillar of stone at the highest point. On the west side of the burn, there is a gentle swelling hill, which gradually rises to the north-west, where it joins the Roman station. Looking north over the holme, the view is tame, barren, and uninteresting, and only presents a very few clumps of hazel and hawthorn.

The house (*fig.* 69. *a*) is situated on an eminence on the west side of the grounds, immediately opposite the cascade and the turn of the water. The whole of the enclosed ground has a considerable descent southward; and, previous to operations being commenced on it, it was very uneven. From the elevated situation of the house, and the quick descent from it, it became necessary to make a considerable terrace (*b*) on the south side, to give ease and facility to the approach and walk round the house, and which is continued quite through to the east side, where it turns into the walk. Below this is another terrace (*c*), which also leads into the same walk, and upon which are clumps of American plants (*d*). This is divided from the kitchen-garden by a narrow belt of shrubs; from which a border (*e*) has a considerable inclination to the walk. The garden (*f*) inclines rapidly to the southern extremity, and is only intended to produce common vegetables, and the commoner fruits; as gooseberries, currants, raspberries, strawberries, and a few standard apples and pears, which were supplied by a neighbouring jobbing gardener, who assisted in the work, and who is afterwards to keep the place in order by coming to work at stated intervals. To enumerate the kinds of

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fruiting plants here, would be of no service, as they are such as I should not recommend generally. If the garden had been placed where I first proposed it, at *g*, on a part of the holme north of the house, with a good wall at the north extremity (which would have served both for a fruit wall and a boundary), with a good belt of trees outside to shelter the whole, and to hide the barren views in that direction, then the present garden would have made a proper and interesting addition to the pleasure-ground. I had proposed this part of the grounds to unite and communicate with the hanging wooded sides of the adjoining hill eastward, by pulling down a side wall, which now separates them from the present garden; then by thinning out and varying the outline at the margin of the wood, and facing with ornamental trees and shrubs, with a winding walk through the skirts of the same leading to the rustic bridge *h*. As a further improvement, I proposed to continue the walk from the west side of the bridge *h*, by an easy curve, to another bridge (*i*), where it would again connect with the grounds. These additions were, however, declined; but it appears very plainly they would have been great improvements. The natural and uneven lawn (*k*) is quite on the surface of rocks; and its rugged descent harmonises well with the still more rugged rocky sides, and the bed of the water; and any art, except planting, on this piece would evidently decrease its native beauty and effect. The ground at the north side of the approach road is a raised inclining mound (*l*), sloping from the north boundary to the road, and about 5 ft. high, with a view to shelter, and hiding as much as possible the before-mentioned barren views on that side. By the water side, and below the level of the ground, is a privy (*m*), and a subterraneous passage, or arcade (*n*), where are preserved many antique remains of Roman altars, with other figures and inscriptions on stone, from the adjoining Roman station. The approach road (*o*) is 10 ft. wide, and the walks (*p*) are 4 ft. wide. The flower borders are at *q*, and the stable and gig-house at *r*: *s* is a vista showing the Roman station from the house. The whole ground (exclusive of the woods (*t*) on the east, and the ground west of the water with the dotted walk *u*) amounts to very little more than one acre. The plan is laid down to a scale of 60 ft. to an inch. The garden contains one fourth of an acre; and the ground marked for planting, about 4497 square ft., nearly 16½ perches. The whole is well sheltered, and the ground was prepared by deep trenching. This, at an average distance of 3½ ft., I calculated to take 350 shrubs, and 200 ornamental trees for the margins and conspicuous parts of the adjoining woods.

Ornamental Trees. — 5 Scarlet maple, 5 Norway maple, 5 Scarlet-flowering horsechestnut, 5 Yellow-flowering horsechestnut, 5 Cut-leaved alder, 5 Shining-leaved sweet chestnut, 5 Cut-

leaved sweet chestnut, 5 Purple beech, 5 Weeping beech, 5 Flowering ash, 5 Black larch, 5 Red larch, 5 Mugho pine, 5 Weymouth pine, 5 Cembra pine, 5 Athenian poplar, 5 White Egyptian poplar, 5 Scarlet oak, 5 Evergreen oak, and 5 American limes; in all 100.

Shrubs for Clumps and Screen Plantations. — 50 Common laurel, 50 Portugal laurel, 20 Common green holly, 20 Laurustinus, 10 Shining-leaved laurustinus, 10 Tree box, 20 Arbor vitæ, 10 English juniper, 10 Red cedar, 10 *Aúcuba* japónica, 12 Alaternus, 6 Arbutus, 6 Sweet bay, 2 Weeping willow, 2 Weeping elm, 2 Weeping ash, 20 Scotch laburnum, 10 Common lilac, 10 Persian lilac, 10 Yew, 10 Spindle tree, 10 Dogwood, 10 Guelder rose, 10 Common syringa, 10 Bird-cherry, and 10 Snowberry; in all 350.

American, or Bog, Plants. — 2 *R*hododéndron pónticum, 1 *R.* máximum, 1 *R.* catawbiénse, 2 *R.* hirsùtum, 2 *R.* ferrugíneum, 2 Kálm*ia* latifòlia, 2 K. angustifòlia, 1 Azàlea viscòsa álba, 1 A. coccínea, 1 A. cárnea, 2 A. póntica (white), 2 *E*rìca *T*étralix álba, 2 E. vàgans rùbra, 1 E. vulgàris variegàta, 1 E. multiflòra, 1 *L*èdum latifòlium, 1 *L.* decúmbens, 1 Andrómed*a* *p*olifòlia mìnor, 1 A. axillàris, 1 *V*accínium *A*rctostáphylos; in all 28.

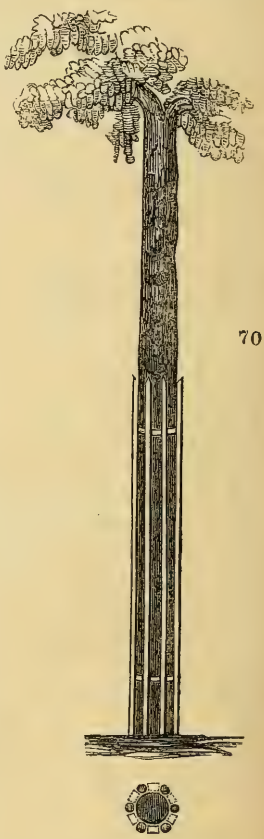
Gateshead, May 18. 1836.

The ground plan, of which *fig.* 69. is an engraving, is one of the most exquisitely delicate and beautiful productions of the kind which we have ever seen; and at first sight it appears scarcely credible that it should be the work of a person who has spent the greater part of his life in handling a spade, rather than a pencil or pen. The copy from which the vignette (*fig.* 68.) is engraved is also executed with great taste, and an obvious knowledge of natural scenery and pictorial effect. The two latter qualities, indeed, were to be expected from the circumstance of Mr. Harland having been brought up partly in the county of Durham, and partly among the mountains and lakes of Cumberland. Mr. Harland, who is somewhere about thirty years of age, has been regularly educated as a gardener, and had filled the situation of head gardener at one or two places before he came into the employ of Mr. Falla. Soon after the death of the latter, about a year ago, Mr. Harland came to London, and is now at work in Mr. Knight's nursery, King's Road. That a man with such talents is fitted for something very different, every reader, we think, will allow; but the difficulty is to find a situation suitable for him. Knowing the private worth and modesty of the man, as well as his knowledge and taste in surveying and drawing, we should wish to see him in the employ of some extensive landed proprietor, who was acting as his own landscape-gardener and planter, and who only occasionally called in the

assistance of an eminent artist; such as Nesfield or Gilpin. To such a proprietor Mr. Harland would be invaluable. Failing this, we should like to see him assistant to an eminent architect and landscape-gardener; or, lastly, in a good situation as head gardener, where there was a new place entirely to make. Something suitable, we trust, is in store for him. — *Cond.*

Art. IV. *A new Guard for single Trees in Parks, &c.* By Charles Lawrence.

With respect to tree guards, I have found, by trial, decided objections to all in common use. Those which confine the tree, and thus prevent injury to the bark, are objectionable; the free motion of the tree being essential to its health and growth. Those which stand at a distance from the tree, consisting of three or four posts connected by spars, are very injurious to the bark in high winds, and all are very expensive. I resolved to obtain some fence possessing the following desiderata: allowing free motion to the tree, without producing any friction on the bark; perfect security against the attacks of cattle; durability, cheapness, and neatness in appearance; and, having completely succeeded, I will now describe it. (See *fig.* 70.)



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Procure stakes of ash or larch, on thinning young plantations, or cutting down coppices, 6 ft. in length, or more if requisite, and about 2 in. in diameter; and have holes drilled through the tops and bottoms, about 1 ft. from each end. Get a similar hole drilled up the centre of a stake, and saw it off in lengths of 2 in., or rather less; pass a strong wire or thick tarred string through one stake, by the holes at the top and at the bottom; then pass it through the hole made in one of the 2-in. pieces at each end, then through another stake; separating each stake at top and bottom by a piece of wood, until you have enough to surround your tree loosely, leaving plenty of space for growth.

Place it round the tree, and fasten the ends of the wire or string. The guard is much the same as the cradle put round the neck of a blistered horse, to prevent his gnawing the irritated part. The stakes merely rest on the ground, and should be cut quite flat at thebottom, to prevent their sticking in the ground. At the upper end, they should have a sharp slanting cut with a bill-hook, and should be threaded with the slope towards the tree. The motion of the tree will not be in any degree impeded; and the bark cannot be injured, let the wind blow as it may, for the guard moves freely with the tree in every direction.

I can vouch for this guard affording perfect protection against cattle; for I had two cows (the most determined barkers of trees I ever met with) in a field in which there were many single trees. They had, sooner or later, contrived to get at my trees, and ruined them; and I was about to fatten them off, and condemn them to death for their offences, when I hit upon the mode of protection just described. My men and myself were curious to see the impression that would be made on these cows by the new guards when they were first turned into the field. They very soon proceeded to the trees, examined the cradles round them, and made several attempts with their mouths. Finding these unsuccessful, they made an attack with their horns; but, as the fence yielded with every blow, and merely turned round, they made no progress in that way. Thereupon they began stamping with their feet, and, as we thought, from sheer vexation and disappointment. Be this as it may, they were completely defeated; and my trees have now continued four years in perfect security, though these identical cows have remained amongst them to this day. One man can fence in this way a great many trees in a day; and the cost of the stakes, if purchased, would not exceed that of one of the posts necessary upon the ordinary plan.

Cirencester, Jan., 1837.

ART. V. *Dimensions of some Trees, and Notes on the Growth of other Trees and Shrubs, indigenous and exotic, on the Estate of Poloc, in Lanarkshire, the Property of Sir John Maxwell, Bart.* By JOHN MAXWELL, M.P.

THE largest wych elm at Poloc, in Lanarkshire, figured by Mr. Strutt (*Sylva Brit.*, p. 140.), was, in 1812, 86 ft. high, and 10 ft. 10 in. in girt at 5 ft. from the ground; in October, 1836, it was 90 ft. high, and 11 ft. 9 in. in girt close to the ground: the girt, in 1836, was 16 ft. 2½in.

The ash at Poloc was, in 1812, 9 ft. 6 in. in circumference; and in 1836, it is 10 ft. 10 in. in circumference at 3 ft. from the ground; and at the surface the girt was 18 ft. 10 in.

The oak at Poloc, in 1812, was 7 ft. 9 in. in girt; and in 1836, 9 ft. 3 in. in girt. Close to the ground the girt was 14 ft. 10 in.

The common sycamore, or, as it is called in Scotland, the plane (*Á*cer Pseùdo-*P*látanus), at Poloc, in 1812, was 10 ft. 11 in. in girt; and in 1836, 12 ft. 3 in. in girt. Close to the ground, in 1836, the girt was 17 ft. 3 in.

The common walnut (*J*ùglans règia), at Poloc, was, in 1835, 12 ft. in girt; in 1836, 12 ft. 3 in. in girt. Close to the ground, the girt was 16 ft. 8 in.

The hornbeam (*C*árpinus *B*étulus), at Poloc, was, in 1812, 5 ft. in girt; in 1836, 6 ft. 6 in. in girt. Close to the ground, the girt was 8 ft. 6 in.

Poloc is an estate about three miles and a half south-west of Glasgow, which is recorded in the *History of Renfrew*, published in 1710, as being "well planted with barren timber." The trees, the dimensions of which are given above, grow upon alluvial soil, and are very healthy and rapidly growing trees. Their age is not known; but the beech and sycamore appear to be much younger than the others.

The wych or Scotch elm, figured by Mr. Strutt, is probably 180 years old; for there is a tree of the same kind near the cascade, which is reported to have been planted by Sir Thomas Maxwell, Lord Advocate of William III., and one of the Commissioners for settling the Union, when he was a child.

The climate of Poloc is mild and moist, as this part of Scotland is narrow; and the Firths of the Clyde and Forth rivers make it subject to sudden changes of temperature, and frequent storms. The elms have long been considered fine trees. The Earl of Bute, when minister, as I am informed, requested and obtained seed from them. Almost all of these trees grow in a deep soil, and are exposed to very severe gales of wind, and frosts late in the spring. I believe there is sandstone rock beneath the soil upon which most of them grow; there are, however, five feet of soil above that bed of rock.

The sycamore is the only tree which is scarcely, if ever, broken by the wind, and which yet does not yield to it, as most, if not all, the other trees do. The beech very seldom is broken by the wind, but it yields to it. The ash does break, as also do the elm and the oak: the elm less than the two others, as its top shoots incline from the wind until of two or three years' growth. The elm is seldom broken at its summit. The lime grows tall and healthily, and its young shoots incline a little from the wind, as do those of the elm. The horsechestnut breaks when young, but is a straight-growing tree, and very healthy; and, when old, it resists the wind remarkably well. The sweet chestnut yields to the wind when young; but, when old, it grows erect, though slowly, and reaches the height of the ash, the elm, and

the beech; but not that of the horsechestnut, which is a shorter and slower-growing tree than the sycamore. The sycamore is called the plane in Scotland, its true name, the great maple, being scarcely ever used to designate it; and the elms here alluded to are wych elms. The ash, sycamore, and wych elm and oak, I have seen in ravines of natural copse-woods, along with oak, ash, birch, and alder, a sort of dwarf aspen, and the mountain ash, or rowan tree, a sort of sorb tree; and they are, I infer, on that account, indigenous to Scotland.

I have introduced here the mossy-cupped oak, and an oak resembling the common one, which I received from Mr. Salisbury. Both grow freely, and resist the wind; and promise to be great acquisitions. The former seems as capable of resisting wind as the sycamore, although it grows like the wych elm, inclining from the wind until it gets strength. The ilex, also, and the Lucombe oak, flourish very much here, and resist the wind very successfully; both grow very well on clay soil of the worst description; viz. of a blue colour, and often of an aluminous nature, with iron, and other substances hostile to trees, contained in it.

The sugar and Norway maples also thrive extremely well, even in unfavourable soils, and also resist the wind, and grow erect, like the sycamore. The liquidambar is equally thriving and capable of resisting wind. The common maple has the same qualities, and also the flowering one: indeed, all maples seem to resist wind, and thrive here: the wet climate prevents insects from hurting their leaves.

The Canadian poplar is the fastest grower in all soils; next to it, the abele, the aspen, and the Lombardy poplar. There is another species of poplar, resembling the Canadian, which I suppose to be the black Italian: it has a whiter bark, more pointed leaf, a more regular and closer form, and a handsomer appearance in winter.

The walnut stands the wind well; but, like the chestnut, is brittle, until it reaches a considerable age, and grows less luxuriantly. Although often affected by spring and autumn frosts, it generally ripens its fruit, which the chestnut seldom does. The purple beech grows as well as the common one. The silver-leaved and Bedford willows grow rapidly, and to a large size, and resist the wind well, yet are sometimes broken by storms. The spruce of Norway grows rapidly when sheltered; but the white American is, I think, a better tree, and more capable of thriving in exposed situations; and the black American spruce is superior to both for resisting wind, but a smaller tree. Neither of the latter are so much injured by hares: indeed, hares scarcely eat them at all. The white is highly aromatic, and on that account, perhaps, less palatable than the Norway spruce. The silver

fir does not grow well here; and the balm of Gilead, very badly; but the silver fir, upon high rocky soils, particularly upon basaltic rock, grows better, and stands the wind better, than any of the spruce or fir tribe. The pine, or Scotch fir, as it is generally termed, grows well in deep sand, but is not a flourishing tree in our soil generally. The larch grows well in sheltered situations, where the soil is dry and hard, gravelly, or loamy; or in any kind of soil upon steep banks.

The pinaster grows rapidly, and is the best pine for resisting wind. The cedar of Lebanon grows well here, particularly upon similar situations to those which I allege suitable to the larch. I have inarched several cedars upon the larch, which seem to promise well; and also upon spruce and silver firs, more recently.

The cypress, when raised from seed, and not transplanted, grows luxuriantly. The acacias grow well, but break frequently in storms of wind. The *Acàcia affìnis*, a most beautiful evergreen, thrives well, but suffers by frosts. All the arbor vitæs grow well here, and also the junipers, called American cedars.

I have planted the stone, or cembra, pine of Siberia, *Pìnus rígida*, *P.* ponderòsa, *P.* taúrica, and the Corsican pine, all which promise to be very valuable trees in stormy and exposed situations. The Roman stone pine grows very well, particularly if not moved from the place in which it is sown; and *P. Tæ`da*, I believe, and *P.* halepénsis, thrive well here, although they grow slowly. I have several others, and amongst them the deodara; but they are too young yet to afford indication of their future character and capacity to grow well here. The Magnòl*ia* grandiflòra has stood out as a standard for three or four years; and the catalpa, Judas tree, and mulberry also. The other deciduous magnolias grow well; and the deciduous cypress grows luxuriantly. The myrtle has been out of doors for two years in severe winters. The bay tree grows very well, and the arbutus in open exposed situations; but they require a dry subsoil. The kalmia grows well, also the cork tree, though very slowly.

The common English elm stands the wind extremely well, and all the elms grow rapidly. The Cornish upright elm, which grows like a Lombardy poplar, is, I think, a very valuable tree for exposed places; as is, also, the weeping elm of America, which grows very luxuriantly and rapidly. The yew grows well, and to a good size, in this district, and resists the wind well. The Virginian scarlet oak grows slowly, and is brittle; but *Q*uércus tinctòria promises to grow well. The hemlock spruce grows slowly here; the weeping willow, luxuriantly; but it suffers by the spring frosts, and sometimes is much injured from the same cause in winter. The cut-leaved alder seems to be a larger tree than the common one, and is a valuable tree; and a kind of ash with undivided leaves grows rapidly, and is a

handsome tree. The balsam or tacamahac poplar, and the Ontario poplar, lately introduced, thrive well; the former resists the storm admirably, and grows rapidly in all soils.

Poloc, Oct. 30. 1836.

ART. VI. *On the Management of Cape Heaths in the open Air during the Summer Season.* By JOHN FYFFE, Gardener to the Rev. W. Mansfield, at Milton Bryant, Bedfordshire.

HAVING been very successful with the "Cape *Ericeæ*" in pots in the open air, I shall not, I trust, be considered intrusive in forwarding to you, for the benefit of some of your numerous subscribers, an account of the mode of treatment pursued by me, which is as follows: —

After first taking out all the plants that I intend from the heath-house (say, at the begining of June), and removing them into pots according to their size, I have a bed of cinder ashes made to the depth of 12 in. or 15 in. and I then plunge the pots into it up to their brims, arranging them according to the height of the plants. Instead of giving large quantities of water in excessively dry weather (as is sometimes done), I give a moderate supply only; at the same time taking care to have the cinder ashes well soaked with water, which keeps the pots in a moist state during the heat of the day. I find this to be much better than the common mode of placing the pots out, and leaving them destitute of any protection from the penetrating rays of a hot sun, which must be most injurious to this very beautiful tribe of plants. When the pots are exposed, in the manner above mentioned, to the heat of the sun, they become quite hot: this consequently exhausts and dries up the soil; and no heath whatever, in this state, can recover, the fibres of the roots being so small, that they lose all their vital action; and the more you water, the sooner you hasten their decay. This error many gardeners fall into with respect to heaths, which are often set out, like other hardy green-house plants, without sheltering them from the scorching rays of the sun; besides which, they are frequently crowded too closely together, which greatly injures them, and brings on that rusty and unsightly appearance so often to be met with in our gardens. I would venture to suggest that the heaths should never be allowed to touch each other, but that they should all stand separate, in whatever form they may be placed; as, when this is the case, they cannot possibly injure each other.

The principal rule to be observed in rearing heaths in houses is, to allow at all times free circulation of air; likewise to keep the pots in a moist state; taking care not to have them soaked too much with water, nor scorched with drought.

I should also say, from my own experience, as well as from the practical instruction I received from the able curator of the Edinburgh Botanic Garden, that no heath ought to be put out of the house, when there is room to keep it in so that the plants may stand clear of each other; as, by being exposed in the open air, they are liable to get drenched by the heavy rains so frequent in the summer months, and which can only be avoided by awnings of canvass being erected (this, too, at a considerable expense), to protect them from the rain as well as from the scorching rays of the sun.

Milton Bryant, Feb. 20. 1837.

ART. VII. *On protecting the Crocus, when in Blossom, from Sparrows.* By WILLIAM ANDERSON, F.L.S., &c., Curator of the Chelsea Botanic Garden.

A BLACK thread, tightly stretched over an edging of crocuses, when in flower, completely protects them from being eaten by sparrows, as they generally are in the neighbourhood of London. The thread must not be nearer the crocuses than 10 in., nor higher than 1 ft.; as the scare is effected by the sparrows not seeing the thread until they alight on the ground under it; when, seeing something artificial, they think it is a trap, and fly off without waiting to examine whether it is so or not. Black threads are equally effectual when stretched over newly-sown seeds; but I find that the threads, in that case, must not be more than 3 ft. or 4 ft. apart; though this may only be applicable in the case of our cockney sparrows, which, you may have observed, when they alight on horse droppings on the public road, turn up one eye to see that all is safe. When they do this in gardens, they see the thread, and fly off.

Botanic Garden, Chelsea, March 13. 1837.

ART. VIII. *On the Management of the Vine.* By A. FORSYTH.

LET the Vine-bed or Border be made of the following earths:— Loamy turf that has been pared quite thin, and stocked in narrow tiers, for one year at least, three parts; and one part of the following mixture: any dry, well aerated animal manure that can most conveniently be got, such as horse droppings, or those of cattle, deer, or sheep, without litter, laid in alternate layers with old plaster or old building lime mortar (the older the better): no matter if there be a few brickbats in it. Let the whole be well pounded, and mixed with the dung, which ought to be in a proper state as to moisture, to ferment a little; after which,

let it be frequently turned, always keeping it rather dry; it may then be wheeled into the bed or border. The loam, when put into the bed or border, should be in pieces about the size of bricks and half bricks, brought from the stacks or tiers where they were originally piled, mixed with the manure, and laid once for all in the place where they are finally to remain; without any turning, chopping, or pounding whatever, which only injures the loam, and renders it too compact, and too much akin to puddle, for vine roots to prosper in. About 16 ft. wide, and from 2 ft. 6 in. to 4 ft. deep, may be considered a moderate width and depth for a vine border, on a substratum of draining at least 1 ft. deep.

On the top of this the vines reared in the manner hereafter stated may be planted. If out of doors, plant the vines 3 ft. from the front of the house, just covering the root-ball of each about 2 in.; over which place a hand-glass. This will keep off rain and concentrate heat. Then lay the cane about 2 in. under ground, till it enters the aperture, or arch, into the house; and over this place another hand-glass; or, instead of hand-glasses, a layer of hot dung or leaves, 1 ft. thick and 6 ft. wide, may be laid along it. It is presumed that the border has been made in autumn; in which case, this planting is to be done in February; especial care being taken that the border does not get either too wet or too dry. In the former case, thatch it; and in the latter, mulch it with fermented dung from old linings or the like; and water it with clean water. This I consider preferable to recent drainings from the cattle layers.

To grow the Vines. — Get some eyes from plants which you have seen and proved; cut them at ½ in. above and below the eye, and insert them singly in pots (of the size 60), about ½ in. under the soil, about Christmas. Keep them growing in a moist heat (say 60° Fahrenheit), and shift them regularly as they require it; training their stems against the wall or trellis in the hot-house. With good culture, in twelve months, they will have stems as thick as the little finger, with 4 ft. of well-ripened cane, and plenty of vigorous roots.

When planted in the Vinery, let them be grown in a like heat till autumn, when the house may be uncovered to ripen the wood: but care must be taken to prevent their freezing. In winter, cut back till you find the wood of a firm texture and good size. Under good culture, from 6 ft. to 9 ft. of firm short-jointed wood may be got. It is always better to leave the canes rather short than otherwise. As regards stopping the leader in growing the canes, I should always grow 5 ft. or 6 ft. of useless vine; that is, I should not stop the vine till it had got 5 ft. or 6 ft. beyond where I expected to cut to in the winter pruning. When you commence growing in the spring, which should not be too

early (say Feb. 15.), let the temperature be low (say 50° Fahrenheit), and the atmosphere moist, that the vines may break at all the eyes. The canes, for this purpose, ought to be laid quite level; and, as soon as shoots have been protruded from the eyes, the canes may be fixed to the trellis, and the temperature increased; but I should by no means allow them to bear fruit yet (unless, perhaps, a cluster on each vine, to prove the sorts). If I intended to force for early fruit the third year, to save repetition, I shall refer to the "Diary of Forcing," which I have already given (Vol. X. p. 547.). To have grapes in their proper season, I would begin to excite the vines in the middle of March, by keeping the temperature about 50° or 55° Fahr.: if it will keep at this without fire heat, so much the better. When the vines are coming into flower, 60° Fahr. would do them good; and, after that is over, and the fruit thinned, they will do very well at 55° Fahr. as a minimum, and at 85° Fahr. as a maximum, of sun heat. I would cause the lateral shoots, or spurs, to bear the grapes, which I would stop at one joint beyond the fruit, and, in pruning, cut back to one eye.

That I may be clearly understood, I shall assume dates:—

Jan. 1. 1836. Vine eyes potted.
Nov. 1. 1836. Vine border finished.
Feb. 14. 1837. Vines planted.
Jan. 1. 1838. Canes pruned or cut back.
Feb. 14. 1838. Vines excited.
Sept. 1. 1838. Vines uncovered.
Jan. 1. 1839. Canes pruned.
March 15. 1839. Vines excited.
July, 1839. The fruit ripe.

The sorts I would cultivate are, Muscat of Alexandria, Dutch Sweetwater, White Frontignan, White Muscadine, Black Hamburg, Black Prince, Black Frontignan for vineries, and Black Espérione and White Muscadine for walls.

ART. IX. *On the Potato, particularly the early Varieties.* By A. FORSYTH.

MY respected father cultivated this root during a period of half a century; and I have prepared sets, planted and cultivated them, after his instructions, under his eye, and since that time, for a period of nearly twenty years. I have also had it in my power to mark their culture in different parts of Britain (some 500 miles between), in various soils, and under various circumstances, with as various success; and, notwithstanding all the experiments that have been made (as detailed in the *Horticultural Transactions*, and other papers on this subject to which I have had access), it does not appear to me that any of the writers have reached the root of the evil.

In the first place, then, according to our theory, there is a radical error in the practice, much in vogue among the growers

around London, of taking up the tubers intended for sets before they are quite ripe: another practice, no less pernicious, in my opinion, is, the keeping of them in large heaps, with moist soil round them, or in warm sheds; and another evil is, the growing of potatoes for years in the same kind of soil. A friend informs me that, in the black shallow soil of Dartmoor, in Devonshire, extensive potato plantations are made, the sets for which are every second or third year procured from the farmers where the soil is red or yellow loam. But to come to the point: and first, then, I will relate how we discovered what I consider a superior method of keeping the sets. On taking in a stack of corn, which had been built on a rustic platform of wood, about 4 in. clear of the soil, some beautiful specimens of potatoes were found in an admirable state of preservation (it being late in the season) in the soil; or I may rather say dust, for it was so dry that it would have drifted in the wind. This was taken as a hint; and subsequent practice confirmed the idea, that, to keep potatoes in the highest state of perfection (that is, perfectly dormant, and yet plump and full-flavoured), they require to be taken up in dry weather, when they are perfectly ripe (that is, when the strings and tubers part freely), and deposited in layers, with dry soil between; say one layer of potatoes, 3 in. deep; 1 in. of soil; 3 in. more of potatoes; then 6 in. of soil; and over this a waterproof thatching, erected on props, 6 in. high, that the winds may act freely on the soil under the thatch.

Gardeners, requiring but small quantities, should look out for seed potatoes in summer, from soils of a different nature to that which they intend to crop; and should have them brought home as soon as they are ripe, and get them deposited as above detailed; they will thus obtain sound perfect sets, uninjured by fermentation or unwholesome damps. To prepare the sets, tubers, about the size of a hen's egg, may be cut in two, putting the crown sets by themselves, which should be planted for the earliest crop. Immediately after the sets are cut, let them be planted: no drying is necessary. Indeed, I should not allow a seed tuber to be exposed to the air, either in the autumn or spring, for a single hour, if I could prevent it. In planting, dig the ground one full spade or spit deep (if previously trenched, so much the better). When two spits have been dug all across the quarter, let the line be strained on the dug ground, and a drill chopped out, about 6 in. deep, in which a layer of any half-rotten manure may be put, such as old mushroom beds, half-decayed leaves, fermented stable dung, &c.; on which (not under it) place the sets, eyes uppermost, 4 in. apart, and let them be covered with the broken soil in the trench; after which the planter may proceed to dig for another row, which may be 2 ft. apart. A great many systems of planting potatoes are prac-

tised round the metropolis, many of which, to say the least of them, are very unworkmanlike: planting with the dibber is a detestable practice in a garden. The best early sorts that I am acquainted with are, the ash-leaved kidney and the early manly: but any of the early sorts, if true, will succeed for all ordinary purposes. No vegetable is more easily forced, or forwarded, than the potato, if allowed plenty of light and air, and kept from frost: it will bear a strong heat, and thus suit itself to any forcing structure, from the pine stove at 70°, to the matted bed in the open border, that is only defended from the frost by coverings. A slight hot-bed is generally preferred, of dung, leaves, or tan, say 3 ft. or 4 ft. deep; with a stratum 6 in. deep of any light soil, in which the sets are inserted about 3 in. deep, in rows 15 in. by 5 in. Time may be gained by forwarding the sets in a box of soil, placed in any of the forcing-houses, and planting them out, under some protection, after they have pushed and begun to root. There are various ways of getting young potatoes (as in cellars, and in boxes of sand) from large coarse varieties; but, as the produce is both unwholesome and unpalatable, I should rather caution against the using of them, than recommend the practice. The earliest potatoes, in the open ground, may be planted about the 15th of March; and the latest, before the 1st of June.

Isleworth, Jan. 11. 1837.

ART. X. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Con-

ducted by G. B. Knowles, Esq, and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

RANUNCULA'CEÆ.

1599. *DELPHI'NIUM* [374.
*vimineum *D. Don* wand-like ♃ △ pr 4 au B N. America 1835 D p.l Swt. Br. fl.-gard.

"This, which we take to be a good species, was raised from seeds received from the late Mr. Thomas Drummond; but in what particular part of America they were collected we are not informed, but, most probably, either in Louisiana or Texas." (*Swt. Br. Fl.-Gard.*, March.)

Crucíferæ.

*MENONVI'LLE*A* Dec. MENONVILLEA. (In honour of *M. Thiéry de Menonville*, an enterprising French naturalist.) [371.
*filifòlia *Fisch.* thread-leaved ○ el 1 au Greenish W Chile 1836 S s.l Br. fl.-gard. 2. s.

"Raised by Mr. Lambert from seeds communicated by M. De Fischer of the Imperial Botanic Garden of St. Petersburg, in the spring of last year. It is a hardy annual, thriving well in a light loamy soil, and is increased by seeds." (*Br. Fl.-Gard.*, Feb.)

Malvàceæ.

2005. NUTTA'LLI*A*
*cordàta *Lindl.* heart-*leaved* ... ... pr ... au Pk N. America 1835 R p.l Bot. reg. 1938.

A pretty species of Nuttáll*ia*, raised by Mr. Murray of the Glasgow Botanic Garden, from seeds collected by Drummond in North America. (*Bot. Reg.*, March.)

Balsaminàceæ § Tropæòleæ.

1148. TROPÆ'OLUM 28188 tricolòrum *Swt.*
Synonyme: T. tricolor *Bot. Reg.* 1935.

Oxalidàceæ.

1414. *O'XALIS* [s.p Flor. Cab. t. 21.
11941*a* *geniculàta *Knowles & Westcott* geniculate ♂ ⊾△⊿ pr ½ o.n Y Cape of Good Hope ... O

"This is an extremely delicate and pretty species, and one which we believe has not, as yet, been described by any botanist. Its foliage is very pleasing; and the flowers, which are only fully open at mid-day (being impatient of the solar rays), are truly brilliant." (*Flor. Cab.*, Feb.)

Rosàceæ § Pòmeæ.

1506. *CRATÆ'GUS* 12916 flàva var. lobàta *Lindl.* in *Bot. Reg.*, 1932.; *Arb. Brit.*, p. 824. fig. 554. and 586.
Synonymes: Méspilus lobàta *Poir. Suppl.*, 4. p. 71.; Cratæ'gus lobàta *Bosc* in *Dec. Prod.*, 2. p. 628.; *C.* turbinàta *Pursh Fl. Amer. Sept.*, 2. p. 735.; *Elliot Sketch.*, 1. p. 549.

Spec. Char. — Leaves rhomboid, somewhat 3-lobed, cut, serrated. Stipulas glanded. Fruit top-shaped, solitary, or in clusters. Spines curved. Pomes 4-stoned. Stones with a very thick shell. (*Lindl.*) Var. lobàta has the fruit solitary, and the leaves more acute and less wedge-shaped. (*Lindl.*)

"A small tree, with the bark of the stem split into many deep rugged fissures, like that of an elm, and with a compact spreading head. It is in some parts spiny; but sometimes it is unarmed. That it is a mere variety of *C.* flàva, must be evident

to any one who will compare the two plants growing: in fact, it seems to differ in almost nothing, except its fruit being solitary instead of in clusters, and its more sharply cut leaves. The two supposed species are, in fact, undistinguishable in general appearance. What its synonymes may be among American writers can only be conjectured. It seems to be the same as *C.* turbinàta of Pursh and Elliott; but the specific phrase of these authors is insufficient to settle the question. Undoubtedly, *C.* flàva of Elliott was a misnomer; nor can the summer haw of the same writer, with oval well-flavoured fruit, from sandy soil on the sea islands of Carolina, be referred to the true *C.* flàva, as he supposes." (*Bot. Reg.*, Feb.)

12919. *Oxyacántha* var. Oliveriàna Lindl. in *Bot. Reg.*, 1933; *Arb. Brit.*, p. 831. and fig. 606.
Synonyme: C. Oliveriàna Bosc in *Dec. Prod.*, 2. p. 630.

Spec. Char. — Leaves and petals downy beneath. Pomes oval, black, 4-stoned.

"This supposed species is clearly nothing more than a variety of the common hawthorn; from which, in fact, it differs in little, except its oval black haws and downy leaves. The latter are generally more or less blotched with brown in the autumn; and the cymes of haws are more compact than those of the common *C. Oxyacántha.* The late M. Bosc, the author of the name, was one of those species-makers who do serious injury to science by the number of errors they crowd into it. It is said to be a native of Asia Minor; I have not seen any wild specimens." (*Bot. Reg.*, Feb.)

12916 flàva *Hort. Kew.*, 2. p. 169.; *Dec. Prod.*, 2. p. 628.; *Arb. Brit.*, p. 823. fig. 585. and plate 113.
Synonyme: Mespilus Michaúxii Pers. Synops., 2. p. 38.

Spec. Char. — Leaves rhomboid, somewhat 3-lobed, cut, and serrated. Stipules glanded. Fruit top-shaped, solitary or in clusters. Spines curved. Pome 4-stoned. Stones with very hard shells. (*Lindl.*)

This species, and its variety, *C.* f. lobàta, "are among those which are the least worth cultivating for their beauty. In fact, their mode of growth is stiff and inelegant; their foliage is neither abundant nor deep-coloured; their fruits are undistinguishable at a little distance from the leaves they grow among; and there is no character in the flowers beyond that whiteness and sweetness which belongs to all the hawthorns." (*Bot. Reg.*, March.)

Portulàceæ.

696. CLAYTO'NIA [fl.-gard. 375.
*gypsophilöides *Fisch.* Gypsophila-like ○ pr ½ o Pk New California 1835 S o.p Swt. Br.

"This very delicate and curious species of Claytonia" was raised by Miss Anna Maria Benett, from seeds obtained from the same source as the Callíchroa, already noticed. It is remarkable on account of the diversity of its leaves; those of the root being slender and filiform, while the solitary cauline pair

are combined together, and are broad and cucullate, but free at the apex. The flowers are produced in great numbers, and, although small, are very pretty, their colour being of a beautiful pink. (*Swt. Br. Fl.-Gard.*, March.)

Crassulàceæ.

3356. ECHEVE'RIA
*racemòsa *Otto* racemose-*flowered* ℄ ⍁ or 2 o C Mexico 1836 C s.l The Botanist, no. 11.

"The plant flowered, in the Liverpool Botanic Garden, in October 1836. It should be potted in light sandy soil, and kept in the stove, or a sunny part of the green-house." (*Botanist*, Feb.)

Cactàceæ or Opuntiàceæ.

1470. *C*A'CTUS 12592 speciòsa [no. 12.
* var. laterítia *Henslow* brick-red ♃ ▭ sp.l 3 jn R Eng. hybrid 1828 C s.p The Botanist,

"The irritability exhibited by the leaves of the sensitive plant is a phenomenon with which most persons are familiar; and many of our readers have probably also witnessed the effect produced by touching the stamen of the common berberry. In these and some other cases on record, certain parts of the flower or leaves move, as it were spontaneously, upon being stimulated in various ways, especially upon being slightly touched or shaken. It has been noticed by De Candolle, that the stamens of the tribe *O*puntiàceæ also show some degree of irritability; and C. Darwin, Esq., informs us that he met with a small species of *C*áctus, common on the arid plains of Port Desire, and Port St. Julian in Patagonia, whose flowers possessed this property in a remarkable degree; and it will be worthy the attention of all cultivators of this interesting tribe to see whether they cannot detect a similar property in other species. Upon thrusting a straw, or his little finger, into the tube of the flower, he found the stamens immediately collapsed round it, and that in a short time the segments of the perianth also slowly closed together." (*Botanist*, Feb.)

3359. ECHINOCA'CTUS [3358.
*mammillariöides *Hook.* Mammillaria-like ♃ ▭ gr ½ ... Y.R Chili 1836 O s.p Bot. mag.

"Introduced by Mr. Hitchin from Chili, and now in the rich collection of *C*ácteæ of Messrs. Mackie of the Lakenham Nursery, near Norwich. They justly observe, that the species appears in the structure of the stem to be intermediate between Mammillària and Echinocáctus. It is covered with mammillæ of a large size, indeed; but these are arranged in costæ (ribs), which are irregular, and slightly spiral; but the flowers appear to be quite those of the latter genus." (*Bot. Reg.*, March.)

*Mackie*à*na* Hook. Mackie's ♃ ▭ gr ½ ... Y.W Chili 1836 O s.p Bot. mag. 3561.

"This species is also from the rich collection of Messrs. Mackie of the Lakenham Nursery, and, like E. mammillariöides, has a considerable affinity with the genus Mammillària; but it is

a much more neatly made and elegant species." (*Bot. Mag.*, March.)

Compósitæ.

2412. GAILLA'RD*IA* 21980 bícolor [Louisiana 1833 D l.t Bot. mag. 3551.
var. Drummónd*ii* integérrima *Hook.* Drummond's entire-*leaved* ♃ △ or 2 au Carmine and Y.
Synonyme: Gaillárd*ia* pícta *D. Don.* in *Swt. Br. Fl.-Gard.*, 2. s. t. 267.; *Gard. Mag.*, xi. p. 25.

"This beautiful plant, which we still hold to be only a variety of G. bícolor, is identical with the G. pícta of the *British Flower-Garden*, and, in reality, differs in no respect from our var. Drummónd*ii*, except in having all the leaves entire." (*Bot. Mag.*, Feb.)

*CALLI'CHROA *Fischer.* CALLICHROA. (From *kallos*, beauty, and *chroa*, colour; in allusion to the rich golden colour of its flower.)
*platyglóssa broad-rayed ○ ♃ el o Y New California 1835 S co Swt. Br. fl.-gard. 373.

"The plant is a hardy annual, and is, in our opinion, well entitled to a place in the flower border, from its dwarf and slender habit, and numerous, broad, wedge-shaped, spreading rays of a rich golden colour; which, contrasted with the dark purple anthers, produce a fine effect. Raised from seeds communicated by M. De Fischer of the Imperial Botanic Garden, St. Petersburg." (*Swt. Br. Fl.-Gard.*, March.)

*MO'RN*A* Lindl. Morna. (*Morna*, a heroine of the northern romances.)
*nítida *Lindl.* beautiful ♃ ⊔ el 2 ... Y Swan River 1835 C s.p Bot. reg. 1941.

"A beautiful perennial (?) everlasting-flower, inhabiting the dry country about the Swan River, whence it was introduced, in 1835, by Sir James Stirling. It is indeed a lovely plant, with its starry heads of the most rich and transparent yellow, having quite a transparent brilliancy when illuminated by the sun." (*Bot. Reg.*, March.)

Lobeliàceæ.

609. LOBE'L*IA* 5098 cardinàlis. [2. s. 372.
var. Miller*i* D. Don Miller's ♃ △ s.p 3 my.s P Eng. hybrid 1835 C s.p Br. fl.-gard.

"A hybrid production, raised by Mr. Evans, gardener to Mrs. Batt at Newhall, near Salisbury, between Lobèl*ia* cardinàlis and L. syphilítica. It is a hardy perennial, very showy, and continues in blossom until the commencement of the winter." (*Br. Fl.-Gard.*, Feb.)

Gesneràceæ.

1608. GESNE'R*IA*
Sellòw*ii* Sellow's ♃ ⊠ or 2 jl S Brazils 1835 O p.l Paxt. Mag. of bot. iv. p. 27.

"This elegant stove plant is a native of the Brazils, and named after Mr. Sellow, a collector of plants for the Prussian government, who sent it, with many others, to the Botanic Garden at Berlin." (*Paxt. Mag. of Bot.*, March.)

1698*a*. RYTIDOPHY'LLUM *Martius.* RYTIDOPHYLLUM. (*Rutis*, a wrinkle, and *phullon*, a leaf; from the rough, or wrinkled, surface of the upper side of the foliage).
*auriculàtum *Hook.* auriculated ♃ □ or 5 n Y.G.R Brazils 1836 C p.l Bot. mag. 3562.

"The learned Martius has, I think, with justice, separated from Gesnèr*ia*, G. tomentòsa *L.*, G. grándis *Sw.*, and G. scàbra, all West Indian species, readily distinguished by their some-

what arborescent or shrubby stems, fibrous roots, pedunculated cymes, scattered leaves, with the parenchyme singularly wrinkled on the upper surface, each little prominence surmounted by a hair, or papilla; to which characters that author adds the presence of stipules. To this group our present plant certainly belongs, although I can find no trace of stipules. From all the previously described species it is known by its entirely sessile and auriculated leaves. Seeds of it were brought to Mr. Murray by the mate of a vessel from Rio Janeiro; but, as no species of the genus has been described as an inhabitant of Brazil, it is probable that it came originally from some of the West India Islands." (*Bot. Reg.*, March.)

Hydrophyllàceæ.

478. NEMO'PHILA [*reg.* 1940.; and Swt. fl.-gard. t. 376.
*atomària *Fisch.* speckled ○ el ½ jn.o W. spotted with purple California 1836 S p.l Bot.

"A new, but not very pretty, species of Nemóphila, nearly allied to the beautiful N. insígnis, but entirely destitute of that brilliant blue in the corolla of that species. The seeds were sent to the Horticultural Society, in 1836, from the Imperial Garden at St. Petersburg." (*Bot. Reg.*, March.)

Scrophulariàceæ.

1783. *MI'MULUS*
*cardinàlis *Dougl.* cardinal ○ s.p.l 2 jl.s S N. W. America 1835 S co Hort. trans. n. s. ii. p. 70. t. 3.; Swt. Br. fl.-gard. t. 358.; Botanist, t. 2.; Paxt. Mag. of bot. iii. p. 197.; Bot. mag. t. 3560.

"One of the several species of *Mímulus* discovered by Mr. Douglas on the fertile shores of North-west America. This was among the last, as it certainly is the most beautiful, of the whole; though its beauty is somewhat diminished by the reflexed position of the scarlet lobes of the corolla. Readily increased both by seeds and cuttings." (*Bot. Mag.*, March.)

Begoniàceæ.

2654. BEGO'NIA [3559.
*octopétala *L'Hérit.* eight-petaled ⁂ ⍓ or 2 o.n Greenish W Peru 1835 C l.p Bot. mag.
Synonyme: B. grandiflòra *Flor. Cab.* t. 25.

"Tubers of this truly fine species of Begòn*ia* were sent in 1835, from Lima, by John McLean, Esq., to the Glasgow Botanic Garden, where the large flowers, like those of an anemone, were produced in the stove during the months of October and November in the following year. We have found that those individuals bloomed best which were in the warmest situation in the stove." (*Bot. Mag.*, March.)

Euphorbiàceæ.

1460. *EUPHO'RBIA*
*fúlgens *Karw.* fulgent ♃ ⌴ p.r 4 jl.s S. Mexico 1836 C s.p Paxt. Mag. of bot. iv. p. 31.
Synonyme: E. Jacquiniiflòra *Hort.*

This beautiful species of *Euphórbia* was first introduced in 1835, by M. F. Rauch, from Vienna, and plants were communicated by him to Messrs. Loddiges. Plants were also communicated by him, in 1836, to Messrs. Lucombe, Pince, and Co., of

the Exeter Nursery, and to Messrs. Low and Co. of the Clapton Nursery; in both of which nurseries it flowered in the autumn of the same year. It was discovered in Mexico by the Baron Von Karwinsky. (See *Gard. Mag.*, xii. p. 390.)

Orchidàceæ.

2496*a*. *SPIRA'NTHES *Lindl.* Lady's Traces. (*Speira*, a spiral, and *anthos*, a flower; in allusion to the spiral manner in which the flowers of many species are arranged). [reg. 1934.
*bracteòsa *Lindl.* *long*-bracted £ ⧄ p.r 1 my G.Y.W St. Catherine's 1835 D l.p Bot.

"An addition to the very difficult genus, of which our own sweet lady's traces forms a part. It was imported from St. Catherine's by Messrs. Loddiges. It is readily known by its long leafy bracts, downy stems and flowers, spreading oval roots, and peculiar lip." (*Bot. Reg.*, Feb.)

2540. ONCI'DIUM
*lunàtum *Lindl.* crescent-*lipped* £ ⧄ p.r 1 jn Y Demerara 1836 D p.r.w Bot. reg. 1929.

"This very pretty species of Oncídium was imported from Demerara by Messrs. Loddiges, with whom it flowered in their stove for epiphytes in June last." (*Bot. Reg.*, Feb.)

*CHY'SIS *Lindl.* Chysis. (From *chusis*, a melting; because the pollen masses are, as it were, fused together.)
*aúrea *Lindl.* golden-*flowered* £ ⧄ or 1 s Y Venezuela 1834 D p.r.w Bot. reg. 1937.

"This beautiful epiphyte was collected in 1834, by Mr. Henchman, for Messrs. Low and Co. of the Clapton Nursery, in the valley of Cumancoa in Venezuela. Mr. Henchman describes it as growing suspended by long fibrous roots from the lateral branches of trees; so that its pseudo-bulbs, which, in their growing state, are uncommonly brittle, hang downwards, and wave in the wind, which would otherwise be sufficient to break them. It has a very delicate perfume in the morning, but appears to lose it in the heat of the day. The remains of spikes have been seen which had produced ten flowers." (*Bot. Reg.*, March.)

2554. EPIDE'NDRUM [p.r.w Bot. mag. 3557.
28832*a* *chloroleùcum *Hook.* green and white-*flowered* £ ⧄ cu 1 s G.W Demerara 1836 D

"Imported from Demerara by John Alcard, Esq., who justly remarks its near affinity with Encýclia pàtens *Bot. Mag.*, t. 3013.; Epidéndrum odoratíssimum *Bot. Reg.*, t. 1415." (*Bot. Mag.*, March.)

*BOLBOPHY'LLUM *Thouars.* Bolbophyllum. (From *bolbos*, a bulb, and *phyllon*, a leaf; in allusion to the leaves universally arising from a bulb-like stem or pseudo-bulb).
*barbígerum *Lindl.* bearded £ ⧄ cu ½ jn R Sierra Leone 1835 D p.r.w Bot. reg. 1942.

"A most curious plant, introduced from Sierra Leone by Messrs. Loddiges, with whom it flowered in June, 1836. It grows pretty freely under the hot damp system of cultivating epiphytes." (*Bot. Reg.*, March.)

Amaryllidàceæ.

HIPPEA'STRUM *Herbert* (p. 81.) [mag. 3549.
*brevifiòrum *Herbert* short-flowered ♂ ⧄ or 3 ap W.R Buenos Ayres 1836 O r.m Bot.

"A very distinct species of a most difficult genus, of which roots and dried specimens have been sent by Mr. Tweedie from the neighbourhood of Buenos Ayres. It blossomed in the stove

of the Glasgow Botanic Garden in April, 1836." (*Bot. Mag.*, Feb.)

970. PHYCE'LLA
29122*a* *brevítuba *Herbert* short-tubed ♂ ⌭ or 1 jl S ... 1836 O r.m Bot. reg. 1943.

Raised in Mr. Knight's nursery, King's Road, Chelsea. Dr. Lindley having been favoured with an early sight of an elaborate work, about to be published by Mr. Herbert, on the natural order Amaryllidàceæ, gives the following extract from it: —

"Some years ago, I planted three species of Phycélla out of doors, in front of a green-house, throwing a small heap of saw-dust over them in winter. In that situation, one of them flowered early in the summer; and they go to rest in the hot dry season. They are tempted by mild weather to push their leaf in the winter, in which case they suffer severe injury from the frosts that may ensue, though they will endure a good deal; and their habit is to flower, after the leaf has acquired its growth, before they go to rest. The phycellas have been found difficult to cultivate, because they have been often set in peat, though they grow naturally in a sandy or strong soil on a dry rocky substratum, and proper rest has not been allowed them. They should be planted in light soil, well drained, and be left dry from the moment their leaves show a disposition to wither, till the bulbs, on examination, show a disposition to push out fresh fibres at their base. The old fibres in this genus seem always to perish before the plant vegetates again; it cannot, therefore, be injurious, and may be advantageous, to take the bulbs out of the ground when the leaves perish, and set them again when they are disposed to move. They will be best preserved, while at rest, in dry sand. I consider that phycellas should begin to grow in February, and go to rest in August: if the leaf endures later than August, they should have six months' rest before they are watered again. A sunny aspect, at the foot of a south wall, appears to suit them." (*Bot. Reg.*, March.)

Asphodèleæ R. Br.

1082. MUSCA'RI
8994*a* *commutàtum *Guss. dark-purple* ♂ △ or ½ mar B Italy 1836 O s.l Br. fl.-gard. 2. s. 369.

"This pretty little bulbous plant is frequent in open grassy meadows in Italy and Sicily. It comes next to M. racemòsum; but in that the leaves are nearly filiform, and the perianthium longer, with the laciniæ spreading, and the mouth, consequently, open." (*Br. Fl.-Gard.*, Feb.)

Liliàceæ § *Antheríceæ* Lindl.

1026. TULBA'GHIA
*violàcea *Harv.* violet-*flowered* ♂ ⌭ p.r 1 o P C.G.H ... O r.m Bot. mag. 3555.

This beautiful plant, a native of southern Africa, flowered in the Ludwigsburg Garden, at the Cape of Good Hope. The roots were immediately derived from the government gardens, the plant having been sent home, some years previously, to Lady Frances Cole. (*Bot. Mag.*, Feb.)

MISCELLANEOUS INTELLIGENCE.

Art. I. *Domestic Notices.*

ENGLAND.

Presents to the Public Parks.—Earl Spenser has made a magnificent present of deer for the use of the Royal parks. They amount to 743, comprising selections from the most approved breeds; and they have been distributed in the several Royal parks of Windsor, Hampton Court, Bushy, Richmond, and Greenwich. (*Thirteenth Report of the Commissioners of Woods and Forests, as quoted in the Morn. Chron.*, March 10.) This example of public spirit is highly gratifying. We have no doubt that, as the landed proprietors of this country increase in intelligence and benevolence (and the progress of the latter will be greatly accelerated by the education of the people, for intelligence can never properly sympathise with ignorance), they will present portions of land to towns and villages for public recreation; strips along the public road, to allow of a margin of turf sprinkled here and there with trees, and so on. In ages of ignorance, the wealthy gave to the church; and why should they not, in enlightened times like the present, derive satisfaction from giving to the public, and thus promote the health and the happiness of many thousands? [See what we have said on this subject in Vol. X. p. 336.] — *Cond.*

Open Spaces for Exercise and Recreation for the People. — " Mr. Hume," in the House of Commons, March 9., " moved a resolution, that, in all enclosure bills, a provision should be made for leaving an open space sufficient for purposes of exercise and recreation for the neighbouring population. He proposed that this should be one of the standing orders." The resolution was highly applauded by several honourable members, and unanimously agreed to. (*Morn. Chron.*, March 10.) We greatly rejoice in this resolution, and have no doubt that many men in the neighbourhood of these spaces will readily contribute a few trees, so as to render them ornamental. — *Cond.*

The Flora of Britain. — A paper was read at a meeting of the Botanical Society of London, held Nov. 19. 1836, by Mr. Irving, containing many facts relating to the science of botany, and the results of observations made by him in its pursuit in the neighbourhood of London. We select the following:— It appears that the number of species of plants found in Great Britain is about 1500, of which about 1000 may be obtained within a circle of twenty-five miles round the metropolis. Mr. Irving had himself found 670 different species within two miles of Hampstead, and 900 within the same distance of the town of Croydon. The neighbourhood of London is considered the richest in the kingdom in the objects of botanical research; and the inhabitants of this smoky city have thus every encouragement to pursue this delightful and healthful occupation. The 1500 different species found in Great Britain comprise all the species existing in Lapland and Sweden, with scarcely any exception. They also comprise about three fourths of those growing in Germany, which is computed to contain about 2000; and about two fifths of the species found in France, which is said to number about 4000; the southern provinces bordering on the Mediterranean, adding greatly to the variety of the vegetable products of that kingdom. (*Morn. Chron.*, Nov. 19.)

A Botanical Collector has sailed for Madeira and the Canary Isles. — Our readers may recollect the advertisements of Dr. Lippold on the wrapper of former numbers of this Magazine, in some of which he proposed giving lessons in German, French, botany, the classics, natural history, theology, &c., for a shilling a lesson; and, in others, he proposed to go out to some foreign country as a botanical collector. Through the exertions of a most benevolent individual, and an ardent lover of botany and natural history (W. Christy, jun., Esq.), Dr. Lippold has at last been able to accomplish the object which was nearest his heart—that of going out as a botanical collector. It was proposed that he should go out on a subscription principle; the sub-

scriptions not to be less than 5*l.*, paid in advance; and the subscribers to receive for each subscription of 5*l.* a certain proportion of seeds, bulbs, or dried specimens. A dozen or two of subscribers were soon found; some, as the Duke of Bedford, anxious to patronise so good a man, and so enthusiastic a botanist, advancing a double subscription; and, on Feb. 27., Dr. Lippold having been completely fitted out, and furnished with letters of credit and of recommendation by his patron and friend, Mr. Christy, sailed in a small vessel, called the Myrtle, for Madeira. The doctor is now in a fair way of realising what has been, as he informed us, his uppermost wish for the last twenty-five years; viz. that of botanising in an extra-European country. We sincerely hope and trust his gratification may be equal to his expectations. We hope there are still a number of wealthy botanical amateurs, who will send their subscriptions for the doctor, in order that, after he has explored Madeira and the Canaries, he may be enabled to proceed to Madagascar, which is his ultimatum. It is highly gratifying to see so deserving a man as Dr. Lippold meet with such patrons as as he has done; men who have not only the will, but the power, to do good. It is most gratifying, also, to observe among the subscribers, not only noble and wealthy amateurs, but the first botanists and cultivators in the country, such as Professors Hooker, Graham, Daubeny, Dr. Greville, N. B. Ward, Esq., W. Borrer, Esq., Messrs. Loddiges, Messrs. Rollisson, &c. Such as are desirous of subscribing will be pleased to address themselves to W. Christy, jun., Esq., Clapham Road, London. — *Cond.*

Pope and Sons' Catalogue of Herbaceous Plants, on a folio sheet, just published, indicates one of the very best collections of herbaceous plants in this, or perhaps in any, country. — *Cond.*

Manchester Zoological Gardens. — The following is Mr. Forrest's "Report on the eligibility of the site of the Manchester Zoological Gardens: — Having surveyed and examined the ground for the intended Zoological Gardens, I have much pleasure in congratulating you on your judicious selection. In making arrangements for such establishments, certain requisites are indispensable; and the success or failure of the undertaking depends wholly upon them. The situation you have fixed upon contains so many of these essential qualities, that, while it reflects the greatest credit upon the directors, it cannot fail in claiming that support which will promote its interest, and carry speedily into execution so laudable an undertaking. The elevation of the ground, the purity of the air, the kindly nature of the soil, and the dryness of the subsoil, will ensure the health of the animals, and, at the same time, promote the growth of all those ornamental trees and shrubs so essential in garden scenery. The more elevated portion of the ground, consisting of a fine mellow sandy loam, and the lower part, around the margins of the intended lake, of a dry and fertile surface, with peat earth, afford an opportunity of combining in your arrangements an arboretum, which seldom occurs, and which I hope the directors will not overlook; for, as you have wisely given up all idea of a botanic garden being connected with this establishment, nothing can be more appropriate as an accompaniment to these gardens than a collection of all the interesting trees and shrubs that will bear the open air of this country, properly named and arranged. The inclination of the ground from north to south being well sheltered from the prevailing winds, having a general surface delightfully undulating, a powerful supply of water from an upper level, and a diversity of soil for every purpose, form a combination of advantages rarely met with in a space of fifteen acres. Having your instructions to prepare your general plan, it shall be gone into forthwith, and in three weeks from thence will be submitted for your approval. I am, gentlemen, your most obedient servant, — *Richard Forrest. Royal Hotel, Nov.* 21. 1836."

A Horticultural and Botanical Garden at Bath has long been a desideratum. That deficiency, it affords us pleasure to state, is now about to be supplied. The committee of our Horticultural and Floral Society, with a view of extending the utility and advantages of that society, have, for the above purpose, secured a most eligible piece of ground, nearly seven acres in extent, and

forming a terminus, on the western side, to the Royal Victoria Park. The piece of land to which we allude was, until recently, a part of the nursery ground in the occupation of Mr. Collens. In selecting this locality for the proposed botanical garden, the committee have kept steadily in view the securing of a site combining a contiguity to the city, the advantages of fine air, a southern aspect, excellent soil, and an admirable approach. (*Bath Gaz.*, Jan. 1837.)

Clapham Common made a public Pleasure-Ground and Arboretum. — Some of the gentlemen resident in the neighbourhood of this common have taken a lease of it from the lord of the manor, at a small rent, for the purpose of preventing the surface of the common from being disfigured by holes dug for gravel, and by the cutting and removal of turf for the nurserymen. Should the lessees be properly supported by the contributions of the inhabitants, they intend to improve the common, and render this already beautiful spot still more interesting and attractive. An anonymous correspondent suggests that one of the simplest and most effective modes of improvement would be to pare and burn the surface, manure it well, and lay it down with artificial grasses, in the same manner as was done with Hyde Park some years ago. After this it could be planted with the hardiest of the hardy, low, and middle-sized trees; and these being properly fenced, the grass might be kept short by sheep, and thus the improvement made, in a great measure, to pay the costs. We have seldom heard of a more desirable improvement; and the gentlemen who have taken on themselves the risk of becoming lessees are entitled to the ample support of all their neighbours, and to the thanks of them and of the public generally. — *Cond.*

List of Pines and other Coníferæ in Boyton House Garden.—*P*ìnus Banks*iàna*, 4 ft. high; *P.* Sabini*àna*, 2 ft. high; *P.* Smíth*ii*; *P.* palústris; *P.* Pallas*iàna*, 70 ft. high; *P.* ponderòsa, 2 ft. high; *P.* pátula, 6 ft. high; *P.* Larício, 30 ft. high; *P.* pumílio, from 30 ft. to 35 ft. high; *P.* brúttia; *P. Cémbra*, 4 ft. high; *P.* canariénsis; a species from Timor, 25 years old, and 16 ft. high, very distinct from any *P*ìnus hitherto described; P. (*A*bies) Webb*iàna*, 4 ft. high; *Araucària* Cunninghàm*i*, 10 ft. high; *A.* imbricàta, quite hardy; *A.* excélsa, 12 ft. high; *C*èdrus *Deodàra*, 3 ft. high, much branched, raised from the first seeds that were sent to England; *Dámmara* austràlis, 4 ft. high; *J*uníperus recúrva; *C*upréssus torulòsa. Besides the above, I have raised, this year, some good plants of that curious herbaceous perennial, Gundè*lia* Tournefórt*ii*, [Compósitæ. See fig. 12787. of p. 747. of *Encyc. of Plants*, and *fig.* 71.], which has been lost to this country since Miller's time; and I have four plants of *E*læágnus orientàlis, 30 ft. high, raised from Persian seeds. — *A. B. Lambert. Boyton House, Oct.* 1. 1836.

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A large Fig Tree in Jersey. — I have just received from Jersey the dimensions of a fig tree which attracted my notice when there. It is reported to be the largest in the island, though it by no means ranks with an enormous one in Guernsey, mentioned by one of your correspondents. That tree, I believe, was a standard, whereas this was originally trained against a wall. The following are its dimensions:—Height, 25 ft.; horizontal extent, 63 ft.; circumference of trunk, 3 ft.: age twenty years. Perhaps it is more remarkable for having attained such a size in so comparatively short a period, than for its actual dimensions. Rather a curious circumstance connected with it, is the fact of a dog, which was chained at the foot of it, acquiring the habit of eating the figs as they dropped. So decided was his taste for them, that, whenever he was let loose, he climbed a ladder (placed for the convenience of

gathering the fruit), and gathered the figs from the tree himself. The tree stands in the stable-yard of my friend Mrs. Janvrin, of St. Aubyn's, and is generally considered to be the largest in Jersey. I certainly saw none approaching it in size. — *W. Christy, jun. Clapham Road, Jan.* 1837.

The Canterbury Mulberry (Mórus nìgra Lin.; *Arb. Brit.*, p. 1343). — I now enclose you a sketch (*fig.* 72.) of the mulberry tree growing on the land

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formerly used as a garden by the monks of St. Augustine. The tree is situated very near the elegant Gothic gateway of the Augustine Monastery, that attracts all lovers of antiquity, whilst sojourning in Canterbury, and is a correct representation of the tree intended to be delineated in the *Journal of a Horticultural Tour*, &c., *in* 1817, p. 14. Of its age nothing is precisely known; but it appears at one time to have been of goodly growth, and no one remembers it in its original position. In the absence of all positive knowledge, a surmise may fairly be allowed; and, if I were asked who was the person likely to have planted it, I should reply, Honest old John Tradescant, the friend and contemporary of Parkinson, who at one time was gardener to Lady Wootton, then residing at Canterbury, and afterwards to His Majesty Charles I.

The Black Bigarreau Cherry is still called Tradescant's cherry by some persons in this neighbourhood, because it was first introduced by him into the same garden, and has thence been very generally distributed.

The Lombardy Poplar (Pópulus *dilatàta* Hort. Kew., P. *fastigiàta* Desf. and Arb. Brit.) — A tree of this species, originally imported in 1758, that had attained nearly 100 ft. in height in the St. Peter's Nursery, was blown down during the hurricane of Tuesday last (Nov. 29.). It girted 16 ft. at the base; and at 6 ft. from the ground, 12 ft. 6 in. It was the largest and best proportioned tree of the species that I ever saw, and, from the southern and western entrances to the town, was an object of considerable attraction. The wood of the trunk was in a complete state of decay, and had produced an abundance of Polýporus igniàrius for several of the past years. — *W. Masters. Canterbury, Dec.* 1. 1836.

The largest Yew Tree in England, according to Gilpin in his *Forest Scenery*, stood in Dibden churchyard, between Lyndhurst and Lymington; and, during the late hurricane, it was completely torn up by the roots. It was 30 ft. in circumference, with three large stems, the weight of which greatly aided the power of the wind in its destruction. (*Newspaper.*)

Eucalýptus robústa. — In the garden of Mrs. Whitley of Newlands, near Lymington, Hants, there is a "Eucalýptus robústa" nearly 20 ft. high, and of proportionate circumference. After it had surmounted the height of the garden wall, it was necessary to create a hurdled protection from the effect of the south-west wind, which brings salt water spray from the sea, near the

Needles. [A specimen of this plant was exhibited at the Linnæan Society on Feb. 7. It was sent, with the above communication, to Mr. Lambert by Sir W. Symonds.]

The Jersey Cabbage, or Cow Cabbage [see Vol. XII. p. 441. and 630.] grows frequently to the height of from 13 ft. to 14 ft. The Earl of Lauderdale has a specimen 13 ft. 6 in. high. Mrs. Whitley has also specimens from 12 ft. 6 in. to 13 ft. 6 in. high, procured for her in Jersey by Sir W. Symonds. [*Sir W. Symonds to A. B. Lambert, Esq.*]

Echevèria gibbiflòra, a beautiful and rare little plant belonging to the order Crassulàceæ, is now finely in flower here in the green-house.—*John Ward. White Knights, Dec.* 21. 1836.

Saul's Seedling Apple, of which a coloured engraving has been sent us, is said to be a good variety either for the kitchen or the table. It displays a great deal of colour, red and yellow; is somewhat ribbed, like a melon; and is said to be produced in clusters. Mr. Saul informs us that it is in season in November. We hope he will send scions of it to the Horticultural Society, in order that it may be fairly tried by competent judges. — *Cond.*

A novel Method of making young Trees of the Swan Egg Pear bear Fruit.— Being in the garden of Wadley, the seat of Thomas Mills Goodlake, Esq., near Faringdon, I observed some trees of the above named sort, standards with their bark beaten to pieces. On enquiring the cause, I was much amused on being informed by the gardener, Mr. Pill, that, the trees not bearing, he had been advised by a neighbour to give them a good thrashing; which he did about three years ago, by taking a stick and beating the trunks, or stems, as long as he was able; since which time they have borne abundantly. I saw them last summer loaded with fruit. — *G. M. Faringdon House, Faringdon, Berks, Nov.* 24. 1836.

Gourds, in Sussex, are grown of extraordinary size. One weighing nearly 40 lb., and measuring 4 ft. in circumference, was this year produced in the garden of a cottager at Portslade, and is now in the possession of J. Borrer, Esq., of that village. (*News.*)

The Tunstall White Wheat, I have just learned from a friend of mine, is superior in quality to either the Hicklings or the golden drop wheat. The straw is stiff, and not so high by 9 in. or 1 ft., as that of any of the sorts of wheat in general cultivation. The plants are very productive, and the grain is a great favourite with the millers. — *Samuel Taylor. Whittington, Stokeferry, Norfolk, Dec.* 23. 1836.

SCOTLAND.

General Improvement. — The commercial spirit has, in all ages and countries, been one of the most powerful instruments of civilisation and of liberal opinions. It is well known, that some of the greatest public characters and best men, both of France and England, are at once landed proprietors and manufacturers; and we are happy to see the same thing taking place in Scotland (our native country), a characteristic of which was formerly said to be "pride and poverty." "When in the west of Scotland, lately, we heard of a baronet who is building, on his own estate, a handsome cotton-mill (which will cost, as near as may be, 20,000*l.*), as the best inheritance he can leave to his second son. The eldest, as heir, is already provided for; and the father remarks, very justly, that the law, army, and navy are now next to nothing; that fighting men, in times of profound peace, have few opportunities of acquiring either fame or fortune; that the crop of clients has been greatly thinned by the progress of moral cultivation; and that, though sinecures still exist in the church and state, he has no wish to see any connexion of his battened on the public in the capacity of *fruges consumere nati*. With these views and feelings, he has determined to set up his son as a cotton-spinner; and, though some may blame, the many, we suspect, will applaud, an example which bids fair to become contagious up to the point of inducing many to go and do likewise." (*Dumfries Courier*, Dec. 1836.)

The Highland Society. — As a proof of the good which the Highland Society of Scotland for the improvement of agriculture have effected through their operations, it was stated at a meeting of the Kirkcaldy Agricultural Association, last week, that the formerly wild and dreary country of Badenoch, lying 1,000 ft. above the level of the sea, and which one might have supposed was destined for ever to continue under the dominion of its native heath, even that country was now in a very high state of cultivation, yielding rich crops, and in a more forward state than many parts of the south. (*The Times*, Oct. 26. 1836.)

Agricultural Museum in Dundee. — I intend, by another season, to commence an agricultural museum in this place, there being nothing of the kind in this part of the country. I have already begun to collect specimens for the purpose; and, if you will send me a few seeds of the fifty-four sorts of wheat which you have received from M. Vilmorin, I will cultivate them, do them all the justice in my power, and send you an account of the result at the end of three years, or oftener if you wish it. — *William Laird, Seedsman. Dundee, January* 11. 1837. We have sent Mr. Laird the seeds of wheat alluded to, and most cordially wish success to his agricultural museum, which cannot fail to be of great use to that part of the country. — *Cond.*

Acácia dealbàta, and the broad and narrow-leaved myrtle, have stood out here for five winters, without any protection whatever; and a list of other exotics which have stood out here will be sent you by L. G. — *C. L. C. G. Forres, Nov.* 12. 1836. [This we shall be most happy to receive.]

Onion Crops of 1833 *and* 1836. — I have just been comparing the weight of my transplanted onion crop of 1836 with that of former years. My heaviest, this season, is 20 oz. In 1833, some of the bulbs weighed 3 lb. Our onions are considered as mild as those imported from the Continent. Fruit is generally small this season, and inferior in flavour, owing to so much wet and cold. On Oct. 28. I gave in new ice for the wine, and on Nov. 1. put in 10 carts into the ice-house. — *Nicol Cathie. Airthrey Castle, near Stirling, Nov.* 10. 1836.

Improved Modes of building Corn-ricks are encouraged in Stirlingshire, and other parts of Scotland, by premiums being awarded to the farmers, and their upper servants who build the ricks. Messrs. Drummond of Stirling have also, with their usual liberality, offered premiums for the best models for either corn, barley, or wheat stacks, and for the four best specimens of straw rope. (See *Stirling Journal and Advertiser* of Dec. 30. 1836.)

Art. II. *Retrospective Criticism.*

Errata. — In Vol. XII. p. 711., line 13., for "*αταπων*" read "*αοπων*;" and for "*ειωθατων*" read "*ειωθοτων*."

The Principle, that no Soil will continue fertile which wants calcareous Matter, made public thirty Years ago. — In Vol. XII. p. 630., you state that, "In agricultural science, the only point that we can recollect worthy of notice that has occurred during the past year, is the advancement of the principle by the American agricultural writer, Mr. Ruffin, that no soil whatever will continue fertile for any length of time that does not contain calcareous matter. This, we believe, was never distinctly stated as a principle by Kirman, Chaptal, Davy, or any other European chemist or agriculturist." In the *Bath Society's Papers*, vol. xii., there is an article headed, "Chemical Analyses of Soils," by C. Boyd; in which, after giving the analyses of three soils belonging to Dr. Fox of Brislington, near Bristol, Mr. Boyd states that these soils were remarkably sterile, and that the leading fact discovered in the analysis of them was, that calcareous earth was wanting in each soil. "I have never heard of a fertile soil," adds Mr. Boyd, "that did not contain some portion of it; and, were I to offer an opinion as to their treatment, it should be to use

limestone gravel very freely. Lime seems necessary as an ingredient in their composition; consequently, it should be had, if practicable, in the state of carbonate: if quicklime is spread, a considerable time must elapse before it returns to that state." In another place, Mr. Boyd remarks, "That plants derive some proportion of earth from the soil in which they grow, cannot be denied: at the same time, it must be admitted, that the carbonaceous principle, in some form or other, appears absolutely necessary to the production of good crops." (p. 392.) It will happen, at times, that the honour of a discovery will be contended for: for instance, the discovery of oxalic acid, which some say was made by Bergman, others by Scheele; and some would rob Priestley of the honour of the discovery of oxygen gas and nitrogen gas, and ascribe this to Lavoisier. I think it but right to state, that the honour is due to Mr. Boyd, for laying before the public, upwards of thirty years ago, the principle that no soil will continue fertile that wants calcareous matter.—*Peter Mackenzie. West Plean, Jan.* 7. 1837.

Art. III. *Covent Garden Market.*

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage, White, per dozen	0 1 0	0 1 6
Cabbage Plants, or Coleworts	0 4 0	0 6 0
Brussels Sprouts, per ½ sieve	0 2 0	0 2 6
German Greens, or Kale, per dozen	0 0 6	0 0 9
Broccoli, per bunch:		
White	0 2 0	0 4 0
Green	0 1 6	0 2 0
Purple	0 1 0	0 1 6
Legumes.		
Kidneybeans (forced), per hun.	0 2 6	0 3 6
Tubers and Roots.		
Potatoes, per ton	5 0 0	6 0 0
Potatoes, per cwt.	0 2 6	0 3 0
Potatoes, per bushel	0 1 6	0 1 9
Kidney, per bushel	0 2 6	0 3 6
Scotch, per bushel	0 2 6	0 3 0
Jerusalem Artichokes, p. ½ sieve	0 1 0	0 1 6
Turnip Tops, per bushel	0 1 0	0 1 3
Turnips, White, per bunch	0 0 3	0 0 5
Carrots, old, per bunch	0 0 4	0 0 6
Parsneps, per dozen	0 0 4	0 1 6
Red Beet, per dozen	0 0 6	0 2 0
Skirret, per bunch	0 1 6	0 0 0
Scorzonera, per bundle	0 1 0	0 0 0
Salsify, per bunch	0 1 0	0 0 0
Horseradish, per bundle	0 1 6	0 4 6
Radishes, Red, per dozen hands (24 to 30 each)	0 2 0	0 0 0
The Spinach Tribe.		
Spinach, per sieve	0 3 6	0 5 0
Spinach, per half sieve	0 1 6	0 2 6
Sorrel, per half sieve	0 2 0	0 3 0
The Onion Tribe.		
Onions, old, per bushel	0 6 0	0 8 0
Green (Ciboules), per bunch	0 0 4	0 0 6
Leeks, per dozen bunches	0 0 9	0 1 0
Garlic, per pound	0 0 6	0 0 8
Shallots, per pound	0 1 0	0 1 6
Asparaginous Plants, Salads, &c.		
Asparagus, per hundred:		
Large	0 7 0	0 9 0
Second, or middling	0 4 0	0 5 0
Sprue, or small	0 2 0	0 3 0
Sea-kale, per punnet	0 1 6	0 4 0
Lettuce, Cabbage, per score	0 0 6	0 0 9
Endive, per score	0 2 0	0 3 6
Celery, per bundle (12 to 15)	0 0 9	0 1 6
Small Salads, per punnet	0 0 2	0 0 3
Watercress, per dozen small bunches	0 0 3	0 0 0
Pot and Sweet Herbs.		
Parsley, per half sieve	0 0 2	0 0 0
Tarragon, dried, per doz. bun.	0 3 0	0 0 0
Fennel, per dozen bunches	0 3 0	0 0 0
Thyme, per dozen bunches	0 4 0	0 0 0
Sage, per dozen bunches	0 2 0	0 0 0
Mint, dried, per doz. bunches	0 6 0	0 0 0
Peppermint, dried, p. doz. bun.	0 1 0	0 0 0
Marjoram, per doz. bun.	0 0 10	0 0 0
Savory, green, per doz. bun.	0 2 0	0 0 0
Basil, dried, per doz. bunches	0 1 6	0 0 0
Rosemary, green, per doz. bun.	0 4 0	0 0 0
Lavender, dried, per doz. bun.	0 4 0	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Rhubarb Stalks, per bundle	0 0 9	0 1 6
Edible Fungi and Fuci.		
Mushrooms, per pottle	0 2 0	0 3 6
Morels, per pound	1 4 0	0 0 0
Truffles, English, per pound	0 16 0	1 0 0
Fruits.		
Apples, Dessert, per bushel:		
Nonpareils	0 12 0	1 0 0
Reinette de gris	0 8 0	0 10 0
Baking	0 6 0	0 7 0
American	0 12 0	1 0 0
Royals	0 4 0	0 6 0
Pears, Dessert, per dozen:		
Bonne Chrétienne	0 4 0	0 6 0
Beurré rance	0 4 0	0 8 0
Almonds, per peck	0 7 0	0 0 0
Strawberries, forced, per oz.	0 3 0	0 4 0
Chestnuts, French, per peck	0 4 0	0 8 0
Pine-apples, per pound	0 8 0	0 12 0
Grapes, per pound:		
Hot-house	1 0 0	1 10 0
Spanish	0 0 9	0 1 0
Portugal	0 1 0	0 3 0
Cucumbers, per brace	0 8 0	0 12 0
Oranges, per dozen	0 0 9	0 2 6
Oranges, per hundred	0 4 0	0 16 0
Bitter, per hundred	0 12 0	1 10 0
Lemons, per dozen	0 0 9	0 2 0
Lemons, per hundred	0 5 0	0 14 0
Sweet Almonds, per pound	0 2 6	0 3 0
Nuts:		
Brazil, per bushel	0 16 0	0 0 0
Spanish, per peck	0 4 6	0 0 0
Barcelona, per peck	0 5 0	0 0 0

Observations. — The continued prevalence of cold weather up to this period has materially retarded the progress of vegetation: our supplies have been very limited. Nevertheless, no great improvement in prices has been effected, in consequence, I presume, of the general depression which has more or less prevailed throughout the metropolis. The supply of potatoes was materially interrupted during the past month, by the prevalence of boisterous wind, which interfered with the regular navigation coastwise, in consequence of which the prices were considerably elevated, but have now nearly resumed their former standard. Carrots are now in demand, with a moderate supply. Turnips are rather scarce, and going out of season. As yet we have had but few early cabbages: the crop is said to be much affected by the unsettled weather throughout the winter. Coleworts are scarce, and realise a good price. Broccolis are generally short in supply, nothing very particular having been offered for some time past. The prospect for vegetables for the ensuing months is by no means favourable. The supply of fruit has been moderate: apples have been furnished steadily. Prices have not varied materially, but few foreign have been imported this season. The crop of winter pears was very small; the supply has consequently been limited. Some few forced strawberries have been produced, of middling quality. Hot-house grapes are, as yet, scarce; but, as the quality of those offered is indifferent, the price is moderate. Oranges, throughout the season, have been irregularly supplied, in consequence of interruption by bad weather: prices have been higher than usual. Chestnuts and Spanish nuts have also been less abundant than usual. The crop of filberts was comparatively small, therefore few are left on hand: but little demand has existed, throughout the season, and prices have generally been steady and moderate. — *C. G. M. March* 21. 1837.

Art. IV. *The London Horticultural Society and Garden.*

Meeting, Feb. 7. 1837. — *Elected.* The following gentlemen were elected Fellows: — George Cooke, Esq.; Sir P. G. Egerton, Bart., M.P.; Mr Richard Forrest, and Christopher Rawson, Esq.

Read. A paper on the Cultivation of Cinnamon in England, by Mr. W. Buchan, gardener to Lord Bagot.

Monthly Meteorological Journal. A statement showing the highest and lowest state of the barometer, the thermometer, and the amount of rain, as observed in the garden of the Horticultural Society, between the 1st. of January and 7th of February, 1837, was read; and notice was given that a monthly statement, similar to the above, would be suspended in the meeting room in future.

A Silver Knightian Medal was awarded to Mr. Glenny, for his varieties of E'pacris; and a *Banksian Medal*, to Mr. W. Buchan, for his cultivation of the cinnamon.

Exhibited. Blood oranges, and Tangierine ditto, from Malta. Seeds of cinnamon, for cultivation in the open air in England, in favourable localities, from Mr. W. Buchan, gardener to Lord Bagot. Oncídium carthaginénse, Phàius grandifòlius and Brùcea maculàta, Pancràtium speciòsum, and Billbérgia iridifòlia, from Mrs. Lawrence. E'pacris imprèssa, E. campanulàta álba, and E. púngens; Velthèmia viridiflòra, Poinsétt*ia* pulchérrima, and camellias, from Mr. Glenny.

From the Garden of the Society. Plants. Eulòphia lùrida, Echevèr*ia* gibbiflòra, and Helléborus odòrus. — *Fruit.* Pears: Beurré rance, Easter beurré, and Rouse lench; all which have ripened more early than usual. Apples. Kitchen: Royal reinette, northern greening, Yorkshire greening, Alfriston, royale rouge d'hiver. Kitchen and desert: Golden russet, London pippin. Desert: New rock pippin, Haggerstone pippin, court pendu plat, reinette du Canada, Dutch mignonne, gros faros, red everlasting (which is more for show

than any other merit: it retains a bloom for a long time on the fruit), fenouillet rouge, and pigeonnet (the last an apple esteemed in France, and by some people in this country, but not generally so.)

Cuttings of the following Fruits were distributed. Plums: Saint Martin's quetsche, an excellent late purple plum, received into the garden from the late M. Fischer of Göttingen; and reine Claude violette. Cherries: Late duke, and Elton. Pears: Beurré Bosc, Hacon's incomparable; about the size of Gansell's bergamot, which keeps till December, and is of excellent flavour. The tree bears well as a standard.

Feb. 21. 1837. — *Papers Read.* On the cultivation of the Melon in open Frames, by John Williams, Esq., C.M.H.S. On the Cultivation of Figs, by T. A. Knight, Esq.

Exhibited. E'pacris imprèssa from W. Bromley, Esq., F.H.S. Tropæ'olum brachýceras, from the Rev. G. Cumming Rashleigh. Oncídium bifòlium, Grevíllea sulphùrea, *E*uphórbia spléndens, Azàlea índica álba, A. póntica odoràta, and a new white *C*yclamen, from Mr. Glenny. *L*ýcium aggregàtum, from Sir G. T. Staunton, Bart. Camellias, from John Allnutt, Esq. Miscellaneous collection of plants from the Hon. W. F. Strangways. Cut flowers from Mrs. Marryat.

From the Garden of the Society. Plants. Azàlea índica phœnícea, A. i. álba, Oncídium ampliàtum, *H*elléborus odòrus. — *Fruit.* Pears: Easter beurré, beurré rance, Dowler's seedling, ne plus meuris. Apples: Rhode Island greening, api gros, fenouillet rouge, northern greening, and American pippin. — *Grafts of the following Pears were distributed:* Nelis d'hiver, monarch, Broom Park, and Eyewood.

A Silver Knightian Medal was awarded to the Rev. G. Cumming Rashleigh, for the Tropæ'olum brachýceras.

March 7. 1837. — *Read.* A paper on the Management of Fruit Trees, by C. Williams, Esq., C.M.H.S.

*Exhibited. R*hododéndron Russell*iànum*, from Mr. Gaines of Battersea. Beurré rance pears, from Mr. Jarvis of Turnham Green. Dendròbium fimbriàtum, D. Pierárd*i*, and D. pulchéllum, from Messrs. Loddiges. Callistèmon sp. nov., from Mr. Henry Pratt, gardener to William Harrison, Esq. A collection of cut flowers, from the Hon. W. F. Strangways. A new Thunbérg*ia*, Grevíll*ea* arenària, Scótt*ia* dentàta, Dillwýn*ia* *j*unipérina, E'pacris nivàlis, E. campanulàta, Ardísia crenulàta, Gloxín*ia* cauléscens, Gesnèr*ia* Douglàs*ii*, Brunsfél*sia* americàna, Ipomœ'a Horsfáll*ii*, Dendròbium pulchéllum, *S*olànum sp., and Lechenaúlt*ia* formòsa, from Mrs. Lawrence. Styphèlia tubiflòra, Phàius grandifòlius, Andrómed*a* floribúnda, Fúchs*ia* microphýlla grandiflòra, Corræ'*a* pulchélla, Hòve*a* purpùrea, and camellias in pots, from Mr. Glenny.

From the Garden of the Society. Plants. Callístachys ovàta, *E*uphórb*ia* *M*yrsinites, Azàlea índica phœnícea, *S*isyrínchium grandiflòrum. — *Fruit.* Pears: beurré rance, ne plus meuris, and Easter beurré, from standards; bellissime d'hiver, a very good stewing pear; and Easter bergamot. — *Cuttings* of emerald; Comte de Lamy, a very sugary melting autumn pear; (Knight's) winter crassane, which fruits abundantly on a dwarf standard, and is as handsome and high-flavoured as the old crassane is on a wall; Brabant bellefleur, figured in *Hort. Trans.*, 2d s., vol. i. t. x. p. 295.; and early purple Guigne, figured in *Hort. Trans.*, 2d s., vol. i. t. iv. p. 144.

Medals awarded. A large silver medal was awarded to Messrs. Loddiges, for their three species of Dendròbium. A silver Knightian medal to Mrs. Lawrence, for Ipomœ'a Horsfáll*ii*; one to Mr. Gaines, for *R*hododéndron Russell*iànum*; one to Mr. H. Pratt, for a new species of Callistèmon; and one to Mr. G. Glenny, for the Andrómed*a* floribúnda.

THE

GARDENER'S MAGAZINE,

MAY, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 3. THE TURNIP SAW-FLY.

ONE of your correspondents (J. B. W., Vol. XII. p. 711.) having recently enquired for an account of the economy of "the small black grub which lately made such havock amongst the turnips," and the same insect having been selected by the Council of the Entomological Society as the subject of the Prize Essay for the year 1837, I have determined on making this destructive insect the subject of the present article; not only with a view of detailing what is already known concerning it, but also for the purpose of noticing several particulars relative to its economy which it is desirable should be ascertained.

About the year 1760, and again in 1782, as we learn from a paper by Mr. Marshall, published in the *Transactions of the Royal Society* for 1783, many thousands of acres of turnips, in certain parts of the country, were entirely destroyed by this insect. In 1818, it again appeared in great numbers, and to a still greater extent in 1835 and 1836. The destruction is produced by the voracious larva, or grub, of this insect, which, from its colour, is called the nigger, or black grub; and a field of turnips infested with it is said to have the "blacks." These larvæ (*fig.* 73. *a*, *b*)are of a cylindrical form, and of a slaty or greenish black colour; having a darker-coloured line down the back, and a longitudinal pale grey or dull yellowish line, succeeded by a dark slate line; the under side of the body being also pale-coloured. The body is transversely wrinkled, independently of the articulations. The head is black, armed with the ordinary apparatus of a masticating insect; namely, an upper and under lip, two horny jaws, and two coriaceous under jaws, acting transversely. The three

following segments are furnished with three pairs of short articulated legs; the fourth segment is footless; but the 5th, 6th, 7th, 8th, 9th, 10th, and 11th segments are provided with short fleshy prolegs (making twenty feet, together with the articulated legs), similar in construction but more numerous than those of the lepidopterous insects (butterflies and moths). Indeed, this caterpillar has so much the appearance of a lepidopterous caterpillar, that, unless its transformations had been traced, it might have been supposed that the injury was produced by the progeny of a moth. It has, however, the habit, when alarmed, of rolling itself in a spiral manner (*fig.* 73. *a*), joining its head to its tail, like one of the cylindrical centipedes (*Iùlidæ*). The larva, when full grown, is rather more than half an inch in length, and is about as thick as a small crow-quill.

Of the devastating powers of the larva, the following extract from Mr. Yarrell's memoir upon this insect, published in the *Transactions of the Zoological Society*, will give a sufficient idea:— "The crops of turnips in the counties of Kent, Essex, Sussex, and part of Buckinghamshire, Hampshire, and Wiltshire, were considered a failure; and so long did the various broods continue their attacks, that the produce of a second, and even of a third, sowing did not escape destruction; nor was it till the occurrence of the rains in September, after an unusually dry summer, in many districts, that the mischief ceased. Some farmers, who sowed for turnips again immediately after the first rain, were as successful as the lateness of the period would admit. It has been observed of those turnips that suffered in the leaf from the attacks of the black caterpillar, but not sufficiently to produce the death of the plant, that the turnip itself had become pithy, and of little comparative value. So great was the failure of the turnip crop generally, that in some of the counties on the coast, where water carriage was available, ship-loads of turnips were said to have been contracted for from the Continent to supply the deficiency." The whole crop of turnips near Dover is said by Mr. Saunders (*Trans. Entomol. Soc.*, vol. i. p. 76.) to have been destroyed, "twenty or thirty caterpillars being found on a single plant, and scarcely a vestige of green remaining; the caterpillars then seeking subsistence on the harder parts of the leaves, such as the tendrils and nerves, which they at first refused." A crop of turnips, near Godalming, is described by Rusticus (*Entomol. Mag.*, No. 14. p. 339.) as having, "in two short days, been swept from the face of the earth. The land was every where as bare as on the day it had been sowed. There was no speck of green for the eye to rest upon. It was a wild and universal desolation; and the black crawling vermin that had caused the ruin were clustered in bunches on the ground, and on the remnants of the turnips." The turnips which escape

the attacks of the turnip flea upon the cotyledon leaves are, at a later period, liable to be destroyed by this nigger caterpillar.

The time of the appearance of the caterpillars is stated by Mr. Curtis (*British Entomology*, October, 1836, pl. 617., folio *a*) to extend from the middle of August to the 20th of October. From the observations of other writers, it would, however, appear that the former is the chief period for the appearance of the niggers; those found in the middle of September being termed by one writer (W. C., in *Saturday Mag.*, vol. vi. p. 181.) as "*several* stragglers, or perhaps larvæ, of a second brood;" and Mr. Yarrell, in the above extract, speaks of "*various* broods," the members of which destroy the produce of the subsequent sowings. This is, however, a question upon which more precise information is required.

When the caterpillar is full grown, it descends into the earth, where it buries itself at a little distance from the surface, forming an oval cell in the earth by the motion of the body; the external particles of earth and sand being agglutinated together (*fig.* 73. *c*), and the interior very smooth, and lined with a silvery-coloured shining matter, evidently caused by some secretion, either from the pores of the body or the mouth, which has dried and hardened. Mr. Curtis states that these insects form an oval horny cocoon, either amongst the leaves on the ground, or under the clods of earth, where they become pupæ; but those which I have seen, and which were placed in my hands by Mr. Yarrell, corresponded with my description. It does not appear to have been ascertained how long the insect remains in the pupa state. Mr. Yarrell, indeed, tells us that, on opening one of the cocoons on Nov. 16., the larva was found to have undergone little or no change at that time: the caterpillar was alive and soft. In some of those cocoons which I opened in the month of May following, the insect was in the pupa state (*fig.* 73. *d*): and, indeed, it is the habit of some of the saw-flies which I have reared, to remain unchanged in the larva state all the winter, and not to assume the pupa state until a very short time previous to their appearance in the perfect winged state. If, however (and here, again, we are deficient in our facts), there be several broods in the course of the autumn, it is most probable that the period between the full-grown larva and winged states does not extend beyond a few days. It is in the month of July that the first winged insects make their appearance from the ground. They are technically known under the name of Athàli*a* centifòliæ.

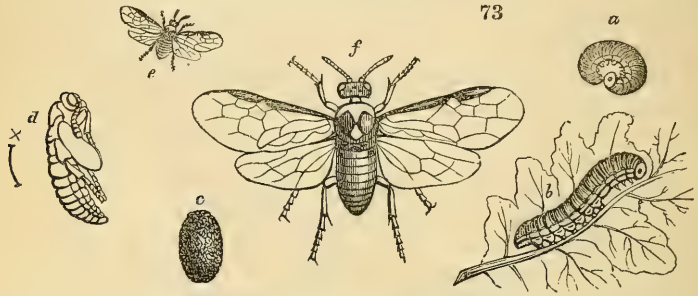
Order, Hymenóptera *Linnæus*. (Membranous four-winged flies, with saws or stings at the extremity of the abdomen.)
Section, Serrífera (Saw-bearers) *Latreille*.
Family, *T*enthredínidæ (Saw-flies) *Leach*. (So named from, and corresponding in extent with, the Linnæan genus *T*enthrèdo.)

Genus, Athàlia Leach. (Synonymes of the genus: Allántus *Jurine*, Hylótoma *Fabricius*.)

Species, Athàlia centifòliæ *Panzer*. (*Insects of Germany*, No. 49. fig. 18.: Stephens, *Illustrations of British Entomology; Mandib.*, vol. vii. p. 62. (Synonyme of the species: Athàlia spinàrum *Curtis*. (*British Entomology*, pl. 617. Fabricius, *Ent. Syst.*, ii. p. 110.?; *Syst. Piezatorum*, p. 26.*)

The perfect insect is about a quarter of an inch long; the wings, when expanded, extending (*fig.* 73. *e*) nearly two thirds of

73



a, Caterpillar; *b*, caterpillar magnified; *c*, cocoon; *d*, pupa magnified; ×, its natural length; *e*, perfect insect; *f*, ditto magnified.

an inch. It is, for its size, a very conspicuous insect, being of a bright orange colour; the head black; the upper lip pale yellow; the antennæ black, varied sometimes on the under side with dirty yellow, nine-jointed, the terminal joint having the appearance of an impression somewhat like a distinct articulation, the basal and terminal joints entirely black; the thorax bright orange, with two large lateral spots; the metathorax black above, with an orange spot in the centre; the abdomen is pale orange, with a small black spot on each side of the basal segment; the wings are orange at the base, and colourless at the tips, the costa, or fore margin, being black and incrassated; the legs are pale orange; the tips of the tibiæ and of the four basal joints of the tarsi black, as are also the entire fifth tarsal joint, and the tip of the ovipositor or saw-like instrument which is employed in depositing the eggs, and of the curious construction of which a future opportunity will occur for the description.

In the perfect state, the insect is in no manner injurious to the crop of turnips, the only objects being now the coupling, and depositing of the eggs. As to the time of the appearance of these insects in the winged state, we find Rusticus stating that, "about the middle of July, these real turnip flies were showered down upon us, as it were, from the clouds; they fell thicker than

* There is some confusion as to this species in the works of Fabricius. In the *Ent. Syst.*, he describes the antennæ as filiform and exarticulate, and the wings as white; but, in the *Syst. Ent.*, he seems to have had another insect in view, as he places it in his section with nine-jointed and filiform antennæ, with the observation, "The larva is black, and feeds upon the *Brássica Ràpa* (or turnip), which it entirely destroys." The confusion as to the *species* prevails also in the *specific name*.

rain drops, and hovered about the turnips in such myriads, that the whole fields were coloured with a rainbowy tinge, when the hot sun shone on the filmy gauzy wings of the flies." Mr. Curtis says, "The fly appears principally in August and September; but I have found them as early as March 29., and as late as the middle of October. I first observed these flies in abundance in a potato field at Battersea, and afterwards in a field near Heron Court: but last year they were distributed over the whole country, after an absence in many places, as I was informed, of upwards of thirty years. They have appeared again this year; and Mr. R. Taylor and myself, in a botanical excursion last August, saw the flies coming out of the ground in myriads, in a ploughed field near Bristol, where potatoes had apparently been grown. The flies do not appear to be attached to any particular plant. Whether the larvæ will attack any other than the English turnip, I cannot determine; but it is a remarkable fact, that they will not destroy the Swedes;" a circumstance also confirmed by Messrs. Yarrell and Saunders, and one which, as it shows the nice distinctions which insects sometimes make in the choice of their food, may be turned to considerable advantage in an agricultural point of view; the former gentleman (*Ent. Trans.*, vol. i. p. 77.) having observed that the Swedish turnip is not infested, in consequence of containing a greater quantity of oily matter, as well as from the more pungent taste of the leaf, and the stronger taste of the root.

From the more prevalent appearance of this insect in the eastern and south-eastern parts of England, as well as from its periodical appearance, it has been supposed that it is not an indigenous species, but that it is brought over from the opposite coast of Europe by wind. "From their more frequently appearing on the sea coast," observes Mr. Marshall, in the memoir above referred to, "and from the vast quantities which have, I believe, at different times been observed on the beach washed up by the tide, it has been a received opinion among the farmers, that they are not natives of this country, but come across the ocean; and observations this year greatly corroborate the idea. Fishermen upon the eastern coast declare that they actually saw them alight in cloud-like flights; and, from the testimony of many, it seems to be an indisputable fact, that they first made their appearance on the eastern coast; and, moreover, that, on their first being observed, they lay upon and near the cliffs, so thick and so languid, that they might be collected into heaps, lying, it is said, in some places two inches thick. From thence they proceeded into the country; and, even at the distance of three or four miles from the coast, they were seen in multitudes resembling swarms of bees."

These facts are, however, so completely analogous to what

has been repeatedly observed with other insects which occasionally swarm; such as the lady-bird, Galerùca tanacèti (*Trans. Ent. Soc.*, No. 2.); that they are not sufficient to lead to the conclusion, that the insect is not originally a native of this country. It is also completely distributed through the southern parts of England, having been found in Hampshire, and in the neighbourhood of Bristol. The periodical appearance of the insects is, in like manner, no proof of their foreign origin; for it is a circumstance of which the youngest entomologist is aware, that many insects are notoriously periodical; and, indeed, in one instance, the periods of the reappearance of an insect (*Cicàda* septéndecim) have been recorded to take place at fixed distances of time; namely, seventeen years apart. In the turnip saw-fly, however, it is more probable that it is owing to some peculiarities of the weather; not only of the year when the niggers do the most mischief, but also of the preceding year, and especially of the preceding winter, when the parents of the nigger caterpillars were not subjected to the ordinarily controlling power of parasites, or other causes of destruction. That they are subject to some such check is evident; and that one, at least, of these checks is an insect parasite, I have proved by discovering enclosed in one of the cocoons the pupa of a dipterous fly, which had undergone its change within the skin of the nigger, portions of which, greatly stretched, remained on the outside of the dipterous pupa, as well as the head of the nigger, which remained entire. An analogous instance, in the case of the *Ophion Dosíthea*, has been recorded by M. Victor Audouin, in the *Annales de la Société Entomologique de France* for 1834.

As to the modes adopted for the destruction of the niggers, it has been suggested that it would be advantageous to draw a hurdle or something else over the turnips, and to repeat the operation from time to time: this has the effect of brushing them off the leaves; and, as it seems they are unable to crawl upon the ground, and recover their station, they must consequently perish unless they are full grown at the time. (*Curtis.*) Messrs. Yarrell and Saunders both mention the good effects of strewing quicklime by broadcast over the ground, and renewing it when dispersed with the wind. Part of a field near Dover is stated by the latter gentleman to have been thus advantageously treated; but few caterpillars remaining on it, although the neighbouring fields suffered greatly.

Rusticus and W. C. both mention that many enterprising farmers had saved those of their fields where the injury had scarcely begun, by turning in hundreds of ducks, a boy going before them with a long pole to brush the caterpillars for them off the leaves of the plants; and that it was amusing enough to witness the ducks waddling after their courier, and devouring

the insects with avidity, eyeing both sides of the leaf, lest they should miss such palatable morsels. Mr. Sells, in a communication read before the Entomological Society, but not yet published, has entered into an extended detail, showing the beneficial results of this plan, adopted upon a large scale, near Kingston on Thames. "Thus," says Rusticus, "two birds are killed with one stone: the ducks are fatted, and the turnips saved. You may depend on it," he adds, "the blacks have some natural enemy beside ducks; if not, ducks would do very well, except that the demand for ducks would be greater, I fear, than the supply. But a farmer, especially if he has water, ought to keep an immensity of ducks: they are always *useful*, as they eat such lots of slugs and other vermin; and, if within a moderate distance of London, always *saleable* at a paying price."

I would also recommend, upon the appearance of the bright orange-coloured flies in a turnip field, the employment of children for the purpose of collecting and killing them, prevention being always better than cure. That the insects are easily to be seen, is evident from the observation of an old turnip-hoer to W. C., in the month of August:—"It is of no use hoeing these turnips, for I perceive this year a fly which is the forerunner of the nigger caterpillar." But it would have been of use if a troop of children had been turned into the field, and the plants cleared of "the fly." On this subject, I am sure it will be profitable to quote a passage from a letter received by me from Mr. Spence, pointing out the too ordinary practice both of horticulturists and agriculturists (like the Carter and Jupiter), in calling for aid from washes, &c., when a little manual exertion would better rid them of their enemies, were they only inclined to set their own shoulders to the wheel:—"How often does one enter a garden with the cabbages dissected to shreds by caterpillars, and the owner enquiring of every one for some recondite mode of killing them; when, if he would offer to two or three lads a penny a quart for all they could pick off, his cabbages would be cleared of every assailant in a few hours; and in the same way he might have the aphides crushed off any plant particularly valuable, and the caterpillars collected from his gooseberry and currant bushes, by shaking them suddenly over two or three newspapers laid round them. Even on a large scale, it might be worth trying if it would not answer, to employ boys to brush off with some light kind of whisk the aphides from hops, when extensively attacked, on sheets spread below, when they could be easily collected and destroyed; and, if a few thousand ducks can clear a district of turnips from the blacks, there seems no reason (seeing that, however fast the ducks gobble, their stomachs have no great capacity, and must therefore soon be filled) why an army of boys, collected from all the neighbouring villages,

might not clear the land quite as effectually, and with little greater cost in the end. The mischief is, that in England we are prone to take it for granted that certain evils are irremediable, without ever fairly trying to remove them. Thus, if our hedges or trees are generally and extensively infested with caterpillars, we should laugh at the idea of getting rid of them by any manual operations; and yet the French and Belgians, in similar cases, constantly employ such means; and, in fact, the municipal authorities every year enjoin, by printed notices and fines for noncompliance, on the proprietors of land, to *écheniller* their trees. Even the very Turks (in such matters less fatalists than ourselves) have the good sense to send out whole armies to collect locusts, and to destroy them (as mentioned in the papers in a recent instance) by thousands of bushels.

[The process *d'écheniller*, or of removing caterpillars, as practised in Belgium, and also in some parts of Germany, in the

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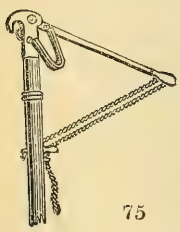
case of trees of considerable height, is, to cut off the points of the young shoots, on the leaves of which the caterpillars are feeding, with an *échenilloir*, or with a very long-handled pair of shears, sometimes, in England, called an averruncator. That the practice is of considerable antiquity in Belgium, is evident from the figure of an *échenilloir* given in one of the oldest Dutch books on gardening we have; viz. Vander Groen's *Jardinier des Pays-Bas*, published in 1699; of which *fig.* 74. is a copy. Here the blades of the instrument are fixed; and, forming two acute angles, a shoot may be cut off with either of them, by



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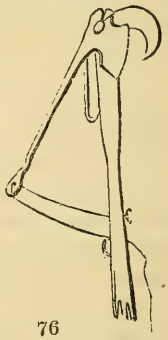

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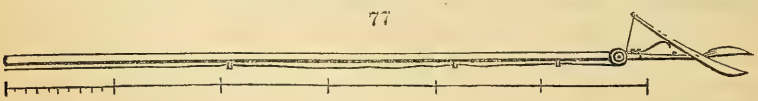

pushing the instrument upwards, or drawing it downwards. Many improved forms have since been produced of the *échenilloir*, or averruncator, both on the Continent and in Britain, most of which will be found figured in the *Encyc. of Gard.*, new edit. One of the best is shown in *fig.* 75.; but *fig.* 76. is

nearly equally good. One of the cheapest, and simplest in construction, is *fig.* 77.; and one, by which a small twig may not only be cut off, but held by the instrument till it is brought down, is shown in *fig.* 78.; in which *a* shows the cord for varying the direction of the cutting or clipping part of the machine, so as to adapt its extremities to the position of the twig to be cut off; and *b* is the cord which effects the operations of cutting and holding.]

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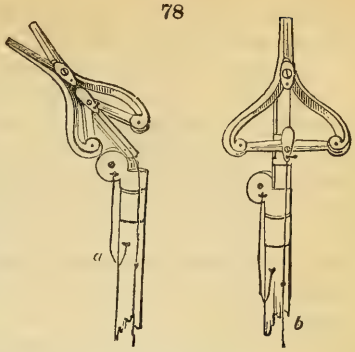

ART. II. *Some Account of Gardens and the State of Gardening in the North and West Ridings of Yorkshire.* By J. B. W.

(*Continued from* Vol. XII. p. 562.)

NEWBY HALL, near Ripon; Earl de Grey. — The house (said to be by Sir Christopher Wren) is a commanding structure, originally, I believe, quadrangular; but its "fair proportions" have been barbarously altered by a modern addition of two excrescences in the form of wings on the east front. Some rooms on the north side also seem not to have formed part of the original building. It is situated on the brow of a gentle slope which leads down to the river Ure, and commands on its south and west fronts pleasing views of the valley of the Ure, and the wooded hills of Studley: on the east is the featureless park; and on the north, a short distance from the house, are the extensive and extremely well-built stables. These are square, enclosing a spacious yard, in the centre of which is an ornamental pump, seen to advantage through the arched entrance from the pleasure-ground. Like the house, the stables are built of brick, except the two sides which front the house and the park; and these are of freestone, with several untenanted niches for busts in the former.

The pleasure-ground is very much confined in breadth, although there is ample space for its extension between the mansion and the river: it, however, extends a considerable distance in one direction along the banks of the river. The trees in this pleasure-ground are of less common kinds than are usually seen at old places. I noticed two or three fine specimens of *Q*uércus *C*érris and *Q.* álba (?); likewise two very large trees of *P*látanus occidentàlis; a variegated-leaved oak, 30 ft. or 40 ft. high; a Salisbùr*ia a*diantifòlia, 16 ft. or 18 ft. high, and as many inches in circumference; a large Magnòl*ia* conspícua; several beautiful

limes; and a magnificent oak, of singular growth, dividing, near the ground, into several tree-like limbs. An opaque-roofed green-house stands in the corner of the pleasure-ground: the plants it contains are of the commonest kinds, except some of Barratt's new fuchsias. A mass of flower-beds, enclosed by a wire fence, is extremely ill placed close to the west front of the house: these beds have nothing whatever to recommend them, and it is seen at a glance that they have no business where they are. The gardener, Mr. Smith, has, in the short time he has lived here, made some very judicious alterations in the pleasure-ground, which, however, is still capable of being greatly improved.

The kitchen-garden is large, and excellently situated, sloping gently to the south, and well sheltered at the back and sides. It is a parallelogram, with the melon ground at the east, and a small flower-garden at the west, end. The hot-houses are placed against the north wall: they are old, and of the common construction; nor did they, when I saw them (July 11.), contain any thing worthy of praise, except some young vines planted last year by Mr. Smith, which are exceedingly well managed. The south wall of the kitchen-garden is rather oddly ornamented with a considerable number of vases placed along its top. It may be owing to my defective taste; but it struck me that ornaments of this description, stuck upon the top of a common brick wall, of which the obvious intention is the production of fruit, and unconnected with any other architectural object, have a singularly incongruous effect.

In the melon ground are two new fruiting pine pits, very neat; but economy of space, which, next to "fitness for the end in view," is the most important consideration in the construction of houses intended solely for the growth of fruit, has been entirely lost sight of. Against the back of one of these houses there are stone troughs, after the manner of those described in the account of Studley, in which cucumbers are planted and trained to wires fixed in the wall. A new variety of cucumber, called, if I recollect right, "Walker's Improved," is grown here, and Mr. Smith speaks highly of its merits. [Probably the cucumber raised by C. J. S. Walker, Esq., of Longford, near Manchester, of which we saw a perfectly straight fruit, measuring 39 in., in 1831.]

The family reside here only during part of the autumn and winter months, and the place is not kept in high order at other times. The evils of absenteeism do not fall upon Ireland alone; its blighting effects are too visible about many of our fine old country residences.

It should be here observed, that, in hastily looking at an extensive place, many things are unavoidably passed over, which,

upon a more deliberate survey, would be found worthy of notice.

August 18. 1836.

ART. III. *Suggestions relative to the Amelioration of our edible Fruits with more Certainty than has hitherto been done; with some preliminary Observations on Grafting, Disbudding, &c.* By D. BEATON.

SHOOTS of apple or pear trees, or, indeed, shoots of any tree of more than one year's growth, may be grafted from February to August, first divesting them of their leaves and the young wood of this season's growth. Oak shoots, three years old, may be readily grafted about the end of May, when prepared in this manner. I believe Mr. Knight is the author of this system, having grafted some walnuts according to it. I have grafted fruit trees for experiment in this way, in every month of the summer, and also seen the oak so grafted; but one year's growth will not succeed. Another peculiarity of one-year-old wood is, if you cut out the buds of last summer's growth in the winter or spring, leaving only the bud at the extremity for extension, the part so disbudded will not form latent or adventitious buds. If, after following this system of disbudding for a few years, you cut out the bud at the extremity, the shoot will die down to where you first disbudded it, although it were the leading shoot of the strongest inhabitant of the forest.

Again, a growing shoot, although divested of its leaves as soon as they are unfolded, will grow as fast, and increase as much in diameter, as another shoot with its leaves in full operation, other circumstances being the same; but, if you continue disleafing the second season, there will hardly be any addition to the diameter of the shoot. Disbudding in this manner the summer's shoots, as they proceed in growth, is the simplest mode I know of for reducing the strength of an over-luxuriant tree. As little or none of the sap taken up by such shoots is elaborated, it is entirely lost to the general secretion of the parent tree. By this method I have, in three years, reduced healthy vigorous young pear trees to the point of starvation. I have now several such trees, on free stocks, and in good rich soil, without more than a dozen of wood buds on a tree, the size of the trees being from 5 ft. to 7 ft. high, and from 4 ft. to 6 ft. in diameter at the lowest branches. When a tree fills the space allotted to it against a wall, and shows a disposition to still further growth, by throwing up strong vertical shoots above the wall, and luxuriant breast wood on the main boughs, instead of checking this disposition by any mode of pruning or training, I assist the tree to throw off the superabundant sap by disleafing the breast wood and

vertical shoots; and in the winter pruning I displace all the buds, even the topmost ones, of such shoots, after which they will die off by degrees. If your trees are not very luxuriant indeed, one year of this treatment will reduce them to moderation; otherwise you must continue it. From a long train of experiments and observations, which it would be of little interest to notice further, I have lately taken up certain ideas relative to the amelioration of our edible fruits with more certainty than has hitherto been done. The principle on which I would proceed is in strict accordance with that laid down by the best writers on the subject; yet my application of it would indicate the very reverse. It is well known that the seed is nourished, in a great measure, by the constituent parts of what we call the fruit; and it is equally well known how essential it is to concentrate the saccharine secretions of a tree in its seed, when it is intended to obtain a new or improved variety from that seed. After dusting the stigma of the variety from which the future fruit is intended to originate with the pollen of the desired male parent, advantage is taken of every possible stimulant to produce the largest and most perfectly formed fruit which the given variety is capable of producing; inferring that the fruit, in the same degree, is capable of conveying the peculiar secretions of the tree to its seed. The inference is entitled to all the attention which has been paid to it; and, in dissenting from this inference without proof of how far my own ideas may be found to supersede or corroborate it, I merely beg the attention of the amateur who has leisure and patience to prosecute the subject; circumstances over which I had no control having prevented myself from following it up for the present.

The circulation of the juices of plants, and the office of leaves, are now known to every one. As soon as the circulation begins actively in the spring, the roots take up a fresh supply of sap; which, in its ascent to the leaves, mixes with the juices already in the body of the tree; and, according as the supply of this solution is greater or less, so is the corresponding size of the fruit; from which we may safely infer that the fruit is chiefly nourished by the solution, though it may be capable of rejecting or throwing off any matter foreign to its own nature. Now, if, instead of supplying this abundance of sap by means of stimulants, you prevent its accumulation, and force the fruit, as it were, to subsist on the already elaborated juices stored up in the body of the tree, you will insure the peculiar secretion of the tree in an unadulterated state, for the nourishment of the fruit and seed. On this rests my idea of improving our fruits; and I recommend the following method to attain the end in view:—

Take a healthy vigorous tree, trained against a south wall: if it has borne no fruit for the last season or two, so much the

better, provided it has previously attained a bearing size, having a greater store of its secretion for the next crop. In the winter, take up this tree, and cut away a few of its best roots; plant it again immediately in the same place, but in poor sandy earth; apply the pollen in the usual way when in flower. The tree will be in a stunted state during the summer, as also the fruit; but the leaves must perform their natural functions, which might, in the present instance, be called unnatural, as, having little or no supply from the roots, they are acting on the juices previously in the system, which is analogous to double distilling. Starved fruit, produced under such severe circumstances, though destitute of size and beauty, are sweet in an eminent degree, as any one may attest who has tasted the first crop of a newly or badly transplanted bearing tree; and it will be found that, notwithstanding the stuntedness of the tree and fruit, the seeds are greatly improved; and many varieties of our best fruits will not seed at all without undergoing some such process.

Haffield, near Ledbury, March 24. 1837.

Mr. Beaton, the author of the above interesting and most original paper, is the author of the "Account of the Vineyard and Plantations of the celebrated Jacob Tonson, the Bookseller and Publisher, which were made at Haffield in 1727," in our preceding Volume, p. 114.; of the remarks on fuchsias, Vol. XI. p. 580.; and of an article, in a future page, on the mistletoe. He has been gardener and general manager to William Gordon, Esq., at Haffield, for the last eight years; and only leaves his situation in consequence of the death of his employer, and the reduction of the establishment. While in the employment of Mr. Gordon, he had, as he informs us, peculiar advantages for acquiring professional knowledge, being allowed the travelling expenses which he annually incurred in visiting gardens in distant parts of the country, including the London nurseries; and even the expense of an extensive correspondence with gardeners was defrayed by Mr. Gordon, who allowed him the free use of his extensive library. Mr. Beaton is in the prime of life, and unmarried; and, if he should not hear of a situation before, will, after visiting Scotland, to see the state of improvement in farming and gardening there, return to London. In the mean time he may be heard of by application to Mr. Munro of the Horticultural Society's Garden, or Mr. Low of the Clapton Nursery. How well deserving such a man is of a first-rate situation, it is unnecessary for us to state to any who have read his communications. We sincerely hope he will soon meet with one adequate to his deserts. — *Cond.*

Art. IV. *Elevation and Description of a Cast-iron Espalier Rail erected in the Gardens of Maeslaugh Castle, Radnorshire.* By James Alexander, Gardener there.

Having erected, in the garden here, in 1834, upwards of 1200 ft. of cast-iron espalier railing, I herewith send you a plan and description of the same. The columns are $1\frac{5}{8}$ in. square at the base, tapering a little upwards, with a small urn screwed on the top. They stand 9 ft. apart, and are leaded into large blocks

of stone, placed a little below the surface of the ground. There is a space of 3 ft. 9 in. between the two horizontal bars; the lower one being 6 in. from the ground. They are $2\frac{1}{2}$ in. broad, and $\frac{3}{4}$ in. thick. The small upright bars are $\frac{5}{8}$ in. square, $8\frac{1}{4}$ in. asunder, and rise with a spear point 5 in. above the upper horizontal bar; the centre one resting in a small flat stone, as shown in *fig.* 79.

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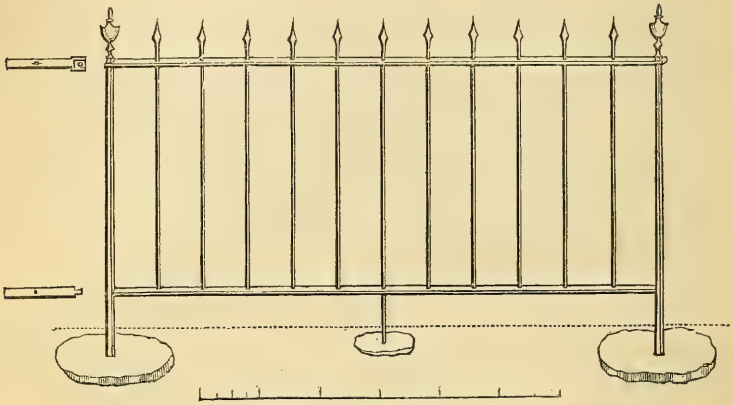


The castings, when delivered at the garden, cost 12*l.* per ton, which will give about 103 ft. of railing. The above is rather expensive at first; but, considering the durability, the convenience, and the elegant appearance, it must be considered much superior to wooden railing, and it will be cheaper in the long run.

Maeslaugh Castle, Oct. 1836.

ART. V. *Instances of the Mistletoe being found on the Oak; with Remarks on grafting and budding the Mistletoe.* By D. BEATON.

MR. PITT, who has been upwards of forty years a farmer and grafter near Haffield, recollects seeing the mistletoe upon but one oak tree, which stood on a farm close to Ledbury. He is confident the mistletoe grew on this tree for fifteen years. There was a large willow tree close by the oak, loaded with mistletoe, from which the oak was supposed to have been supplied. This oak was cut down six years ago.

Through the kindness of Mr. Moss, gardener to Earl Somers at Eastnor Castle, I have now before me a shoot of oak with two plants of the mistletoe growing on it. The oak tree on which this mistletoe grows is the only instance of the kind known to Mr. Moss. It grows not far from Eastnor Castle, on Earl

Somers's estate. There are several plants of mistletoe growing on this tree, one of which is of great age, and nearly 5 ft. in diameter. It is more vigorous than the plants of mistletoe growing on the apple, probably owing to the greater vigour of the oak, and to its being more shaded in the summer.

The mistletoe does not form that swelling at its junction with the oak which it does on most other trees. Mr. Moss has a nursery of his own at Malvern, where he intends to try all the experiments on the mistletoe suggested in your *Arboretum Britannicum* this season; and will have for sale, next October, plenty of mistletoe plants, grafted standard high. Mr. Moss has hit upon an excellent plan for the successful propagation of the mistletoe for sale, which is, getting young shoots of apple and pear trees on which the mistletoe is established, and grafting them in his nursery. I think the first or second week in May is the best time to graft shoots of the mistletoe.

I have no doubt but the mistletoe may be grafted with success on the oak; but, in all probability, the bark of the oak is too hard and dry for the frequent vegetation of the mistletoe seed. I have grafted the mistletoe on the balsam poplar only; but Mr. Pitt says he has grafted it "on all kinds of trees;" though he does not recollect having grafted it on the oak. The apple or crab is certainly the best stock for nurserymen to graft the mistletoe on; the pear is the next best; then the strongest-growing poplars and willows. It should never be grafted lower than 5 ft. from the ground, nor higher than 10 ft. Most nurserymen have quantities of standard apple and pear trees, on which they could work these grafts; and, if there were a demand for the plant, it would be a good way of getting rid of their stock of trees, which they could not do by other means.

Budding and grafting the mistletoe is very simple: merely an incision in the bark, into which a thin slice of mistletoe is inserted, having a bud and one leaf at the end. Grafts less than half an inch in diameter may be put in in the same manner; but, in grafting larger pieces, a notch should be cut out of the branch, the incision made below the notch, and a shoulder left on the graft to rest on the notch, in the manner of crown-grafting. All that the nurserymen have to do is, to insert small scions in the largest shoots of their apple and pear standards.

About the middle of May is the best time to bud the mistletoe. The budding is only a modification of grafting, as you retain a heel of wood below the bud for insertion. I send you now some mistletoe grafts, and will bring more with me when I come to town; and you may try both. I likewise send you an oak branch with the mistletoe on it.

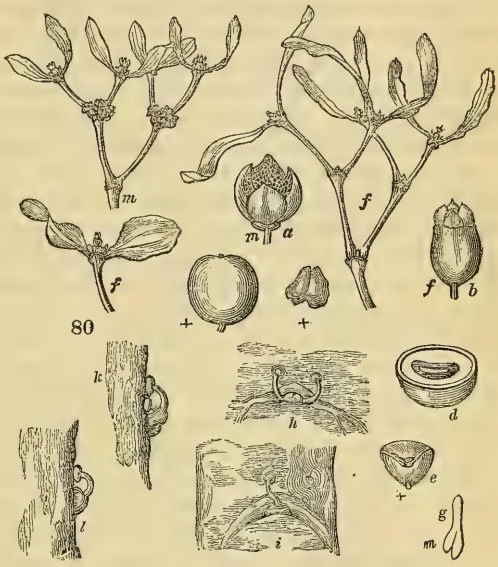
Haffield, near Ledbury, March 24. 1837.

The above are extracts from three letters received from Mr. Beaton; and with the last we received the scions and branch of oak containing mistletoe on it referred to. The oak branch is about 3 ft. long, the bunch of mistletoe about 18 in. in diameter; and it appears to be a male plant. Its largest leaves measure $2\frac{5}{8}$ in. long, and $1\frac{1}{16}$ in. broad; which is about one fourth larger than those of the mistletoe growing on the apple. No leaves or acorns were sent along with the oak; but, from the large size of the buds, we should suppose it to be *Quércus sessiliflòra*.

The following extract from the *Arboretum Britannicum* exhibits all that we knew respecting the propagation of the mistletoe in August, 1836: — "In a state of nature, the mistletoe is propagated by the berries being, by some means or other, made to adhere to the bark of a living tree. The common agency by which this is effected is supposed to be that of birds; and more especially of the missel thrush, which, after having satisfied itself by eating the berries, wipes off such of them as may adhere to the outer part of its beak, by rubbing it against the branch of the tree on which it has alighted; and some of the seeds are thus left sticking to the bark. If the bark should be smooth, and not much indurated, the seeds will germinate, and root into it the following spring; that is, supposing them to have been properly fecundated by the proximity of a male plant to the female one which produced them. Aristotle and Pliny among the ancients, and Dr. Walker among the moderns, considered that the mistletoe was propagated by the excrements of the birds which had fed on the berries; supposing that the heat of the stomach, and the process of digestion, were necessary to prepare the seeds for vegetation. Ray first suggested the idea of trying by experiment whether the seed would vegetate without passing through the body of a bird; and, at his suggestion, Mr. Doody, an apothecary of London, inserted a seed of the mistletoe into the bark of a white poplar tree, which grew in his garden, with complete success. This, Professor Martin observes, has been since done by many persons, both by rubbing the berries on the smooth bark of various trees, and by inserting them in a cleft, or in a small hole bored on purpose, which was the mode adopted by Doody. Mr. Baxter of the Oxford Botanic Garden, in the spring of 1833, rubbed nine mistletoe seeds on the smooth bark of an apple tree, all of which germinated: two produced only one radicle each, six produced two radicles each, and one produced three; from which it follows, that two radicles are more common than one in the seeds of this plant. There as many embryos as radicles.

"The celebrated Du Hamel, arguing that the seeds of the mistletoe, like the seeds of other plants, would germinate anywhere, provided they had a suitable degree of humidity, made them sprout not only on the barks of different kinds of living

trees, but on dead branches, on bricks, tiles, stones, the ground, &c. But, though they germinated in such situations, they did not live any time, except on the bark of living trees. M. Du Trochet made seeds of the mistletoe germinate on the two sides of the frame of a window, and in both cases the radicles directed themselves towards the interior of the room, as if in quest of darkness. (See *Richard's Elements of Botany;* and *Baxter's Brit. Flowering Plants,* art. Viscum.) The first indication of germination is the appearance of one or more radicles, like the sucker of a house-fly, but larger; as at *h i* in *fig.* 80., which are front views, and at *k l* in the same figure, which are side views, taken from mistletoe berries, which were stuck on the upright trunk of a cherry tree in our garden at Bayswater, in March, 1836, and germinated there, as they appeared on the 20th of May of the same year. When the white, viscous, pulpy matter of the mistletoe berry is removed, the kernel, or seed, appears of a greenish colour, and flat; sometimes oval, at other times triangular, and at other times of various forms. In *fig.* 80., *a* is the male blossom magnified; *b*, the female blossom magnified; *d*, a berry cut through, transversely; *e*, a seed divided vertically, showing the two embryos; *g*, the embryo magnified; *h*, the two embryos, with the two radicles germinating; *i*, a single radicle; *k*, a side view, or section, of the two radicles; and *l*, a side view, or section, of the single radicle.



"It is remarked by Du Hamel, that, when the form of the seed is oval, generally one radicle only is protruded; but, when it is triangular or irregular, 2, 3, or more, appear. It is singular, that, while the radicle of almost all other plants descends, this is not the case with the mistletoe; the young root of which at first rises up, and then bends over till it reaches the body of the substance to which the seed has been attached, as at *k* and *l*, in *fig.* 80. Having reached that substance, the point of the radicle

swells out like the extremity of the sucker of a house-fly, or, according to the comparison of Du Hamel, like the mouth-piece of a hunting-horn. The extremity of the radicle having fixed itself to the bark, if more than one have proceeded from a single seed, the embryos all separate from it; and each, putting out leaves at its upper extremity, becomes a separate plant. In the case of the seeds which germinated on the bark of trees in our garden at Bayswater, the embryos had not separated from the seed on Aug. 15., the day on which we correct this proof. When the mistletoe germinates on the upper side of a branch, the shoots bend upwards; but, if they are placed on the under side, they descend: when they are placed on the side of a perpendicular trunk, they proceed horizontally, spreading, of course, with the growth of the plant, so as ultimately to form a hemispherical bush. The roots of the mistletoe, which penetrate the bark, extend themselves between the inner bark and the soft wood, where the sap is most abundant, sometimes sending up suckers at a distance from the point where the root entered; and hence Professor Henslow concludes that the mistletoe is propagated in the bark or young wood of the trees in which it is parasitically established, in the same manner as those terrestrial plants which, like the potato, possess rhizomata, or underground stems, or suckers, from the surface of which young plants are developed at intervals. The roots of the mistletoe, as the tree on which it grows advances in growth, become embedded in the solid wood; and hence has arisen the opinion of some, formed from sections of a branch on which the mistletoe had grown for many years, that it not only roots into the bark, but into the wood. This, however, would be contrary to the wise economy of nature, since it could serve no useful purpose to the plant. The effect of the mistletoe upon the tree on which it grows is injurious to the particular branch to which it is attached; and more particularly to the part of it which extends beyond the point from which the mistletoe protrudes. This is easily accounted for, from both the ascending and returning sap being in a great part absorbed by the roots of the parasite, and prevented from circulating properly. As it does not appear that any part of the sap returned by the leaves of the mistletoe enters into the general circulation of the tree, it is easy to conceive that a certain number of plants growing on any branch would, after they had so far injured that branch as to prevent it from putting out leaves at its extremities, occasion its death, as well as their own speedy destruction. Hence, in orchards, the mistletoe is always removed as soon as it appears. The injury which it does is much greater than that effected by other plants which grow on the bark of trees; such as lichens, mosses, ferns, &c.; which, though commonly called parasites, are, in botanical language,

epiphytes; that is, inhabiting trees, but not living on their substance. The nutriment which supports epiphytes is derived from the decay of the outer bark, or from the atmosphere. Two experiments remain to be made with the mistletoe: the first is, whether it may be propagated by inserting cuttings in the live bark, in the manner of buds or grafts; and the second, whether a plant of mistletoe would keep alive the tree on which it grows, after that tree was prevented from producing either leaves or shoots.

"The propagation of the mistletoe in British nurseries has scarcely been attempted: but nothing could be easier on thorns or crab apples, planted in pots for the conveniency of removal. Perhaps, if it were propagated on shoots of the poplar or willow, truncheons of these trees with young plants of mistletoe on them might be taken off, and planted as cuttings, without injuring the parasite." (*Arb. Brit.*, art. *Viscum*, p. 1025.)

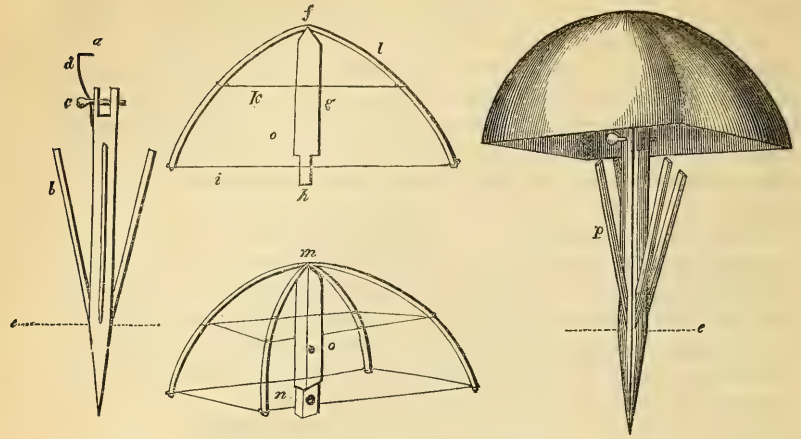
As it is not yet too late to stick on berries of the mistletoe, the information communicated above may be turned to immediate use. Mistletoe berries may be most easily obtained through a Herefordshire or Worcestershire nurseryman; for example, Godsall of Hereford, Smith of Worcester, or Moss at Malvern. From the latter, plants may be obtained next autumn, as stated above by Mr. Beaton. — *Cond.*

ART. VI. *Description of an oiled Paper Cap for protecting Dahlias, when in Flower, from autumnal Frosts.* By JOHN TURNBULL, Gardener to Charles Cowan, Esq., of Valleyfield Bank, Pennycuick.

I BEG leave to send you an account of an oiled paper cap (*fig.* 81.), for protecting the dahlia when in flower. For protecting fruit trees when in blossom, oiled paper frames have been long in use, and one of the best modes of applying them has been shown by Mr. Smith, gardener at Grangemuir, in the *Caledonian Horticultural Society's Memoirs.* I have been very successful in growing cucumbers and melons under oiled paper frames; and, though they suffer much from cats (for in one night my frames have been almost wholly destroyed by these marauders), they are so very cheap, and easily made in any wet day, that the damage may soon be repaired. In making them, I commence first with the skeleton, and then paste on the paper; after which I let them stand to dry. When they are fully dry, I put on one good coat of boiled linseed oil, mixed with a little white lead. These frames may be made of any shape or size wanted.

Our garden is in a low situation, and near water; and my dahlias are generally frosted down five or six weeks before my

81



neighbours', and before one half of them are in flower. These frames will protect the plants from the perpendicular frost until the roots are ripe. The supports of the frame answer, also, for supports to tie the plants to. The top of the frame may be taken off, and put on, at pleasure; or bent back, by taking out the wire. When these frames are once made, they are easily kept up, and they will endure for many years, with little repair. In many places, supports for dahlias are not got without trouble and expense; and, after all, they do not protect the plants from the frost; but my shade will do so. My object, at present, is to protect my dahlias from autumnal frosts, which nip all the tenderest plants, such as the Mrs. Elphinstone, the Lady Milner, and the Conqueror of Europe dahlias, when in full beauty. These frames will also shade fully expanded flowers from the sun, when you wish the fine colours to be preserved. If the above directions be properly attended to, the result will be satisfactory.

Valleyfield Bank, Pennycuick, near Edinburgh,
March 12. 1837.

The model sent to illustrate the above paper is 18 in. long. The cap, or head, which may be described as a four-sided cupola, is 13 in. on the side at the lowest part, or rim; and the perpendicular height of it is 5 in. In *fig.* 81. *a* represents the stake which supports the cap; *b*, the four side branches to which the dahlia shoots are tied; *c*, a wooden peg for fastening the tenon of the cap into the mortise of the stake; *d*, a hooked wire attached to the stake, and adapted to an eye in the stem of the cap, to make sure of holding the latter fast; *e*, the surface of the ground.

The skeleton, or frame, of the cap is shown by the letters *f* to *l*. This figure is a geometrical elevation of one side, in which *f* is the summit where the two ribs that form the four

angles of the cap cross each other, and into which the stem (*g*) is inserted; *h* shows the edge of the mortise; *i*, the lower wire; *k*, the upper wire; and *l*, half of one of the ribs; the half of the other being represented on the opposite side of the figure.

A perspective view of the skeleton of the cap is represented by *m*, in which may be seen (at *n*) the hole in the tenon for the peg (*c*), and the eye, a little farther up, for the hook (*d*).

A perspective elevation of the stake, with the cap on, is represented at *p*.

In constructing stakes of this kind, the workman will, of course, adjust the length of the stake, and the diameter of the cap, to the height and breadth of the plant to be protected. The model sent might answer for pelargoniums, fuchsias, and other green-house plants, when newly turned out into the borders. It would also answer for dahlias, when newly turned out; but for full-grown dahlias the stake would require to be from 3 ft. to 5 ft. high.

Caps of this sort, made sufficiently large, and with the stem coming through the cupola, so as to serve as a handle, might, perhaps, form a very good winter protection for cauliflowers, or spring protection for ridged-out cucumbers, &c.; and it might serve to accelerate rhubarb in the open air, instead of hand-glasses, which were so successfully used for that purpose by Alexander M'Leary, Esq. A cap of basketwork, of the same form as that just described, with a stem to support it, in order that its rim might not rot by coming in contact with the ground, might, perhaps, be used as a protection for cauliflowers and other plants throughout the winter. — *Cond.*

ART. VII. *On the Balanìnus nùcum, or common Nut Weevil.* By J. WIGHTON, Gardener to Lord Stafford at Cossey Hall; with a Note by J. O. WESTWOOD, Sec. Ent. Soc.

I HAVE never remarked in your pages any notice of the *Cur*cùlio nùcum of Linnæus (Balanìnus nùcum *Germar*) attacking vines; nor is this insect mentioned among those which are found on vines. I never observed it before the spring of the present year; when, in the month of April, just as my vines began to show fruit, the young shoots began to drop off. Supposing that the mischief was caused by snails, I made diligent search for these destructive enemies; but, to my great surprise, I discovered hundreds of the weevil underneath the old bark of the vines. Had I not fortunately made this discovery, and succeeded in destroying the insects, the whole crop of fruit would have been gone in a few days. The method I adopted to destroy them was the following: — I took off all the old bark, examined the vines carefully, and killed all I could find. Then

I put bandages of woollen cloth round the stems, and rubbed over the bandages with grease and train oil. I never found them pass these bandages. At night, I found plenty of these insects on that part of the vine below the bandage, all making their way up the stem; but they never ventured beyond the bandage. Night is the best time to look for them: but this must be done very cautiously; for they drop off if the vines are ever so little shaken, or if a light is held near them. What few I found above the bandages were only those which had escaped my previous search: they are exactly the colour of the bark. I put oil and grease on the ends of the wires also, to prevent their approach that way. I cannot account for their presence in my hot-houses, except on the supposition that they were brought in with the leaves which I use in the pits. It is the same insect which attacks raspberries in cold springs.

Cossey Hall, Norfolk, Nov. 8. 1836.

Not having ever heard of any instance of the nut weevil so entirely changing its habits as is here detailed, and there being several other species of weevils which do mischief to the vine, I am induced to enquire whether Mr. Wighton is certain as to the specific identity of his insect with the nut weevil. The Baron Walckenaer, in his curious *Memoir upon the Vine Insects*, which has already been translated and published, both in the *Entomological Magazine* and in Mr. Taylor's *Philosophical Memoir*, has described the economy of Rhynchites Bácchus and R. betulèti, both of which are very destructive. The Otiorhýnchus ligústici *Fab.* (figured by Olivier in his *Ent.*, p. 7. fig. 77.), also, every year destroys great quantities of the vines in the neighbourhood of Paris, and devours the young shoots of asparagus, &c. It is found in sandy places, and in the hollows, and at the bottom, of old walls. (See *Dict. Classique des Scien. Nat.*, art. *Charanson.*) It is curious that the Baron Walckenaer has omitted all reference to the injuries produced by this insect. Will Mr. Wighton oblige me by forwarding to Mr. Loudon, at his convenience, one of his weevils for my inspection? — *J. O. Westwood.*

Art. VIII. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing

eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

RANUNCULA'CEÆ.

1599. DELPHI'NIUM
var. *Barlòwii Hort. Barlow's ♃ △ s.pl 2 jn.s D.B Eng. hybrid ... D p.l Bot. reg. 1944.

"This *D*elphínium presents to the eye the most gorgeous mass of deep lapis lazuli blue that I am acquainted with in the vegetable kingdom. It is quite impossible to describe, without an appearance of exaggeration, the effect of several plants growing in a cluster, and well packed up with species whose colours harmonise with the blue." Messrs. Rollisson received this *D*elphínium from a friend at Manchester, several years ago, under the name of *D*elphínium Barlòw*ii*; and they believe it to have been raised by a florist of that name in the neighbourhood of Manchester; probably from *D.* grandiflòrum and *D.* elàtum, as it partakes in growth and flower of the character of both. It is very easy of cultivation; and it appears to flourish in every soil and situation. Messrs. Rollisson have had plants in bloom throughout the whole of summer and autumn; the principal stems sometimes attaining the height of 7 ft. and 8 ft., and much branched. It is met with sometimes also under the name of *D.* phœníceum. (*Bot. Reg.*, April.)

*Papaverà*ceæ.

3370. *CHRYSE'IS Lindl. Chryseis. (Named after *Chrysēis*, a celebrated Homeric beauty; in allusion to the golden colour of the flowers.)
*compácta *Lindl.* compact, *or dwarf* ⁂ △ or 1 jl.o Y California ... S co Bot. reg. 1948.

"This plant seems to stand in much the same relation to Chrysèi*s* califórnica and cròcea, as these to each other; that is to say, if they are distinct, so is this; but, if they are varieties only of one species, this must be reduced to that species also. It differs from both of them, in having a much more dwarf compact habit; the segments of the leaves very slightly toothed, instead of deeply lobed; and in the flowers being far smaller.

"With respect to the generic name, which, it will be perceived, is altered from Eschschóltz*ia* to Chrysèi*s*, I beg to insert the following note from a botanical friend, on whose correct judgment I place great reliance: —

"'It is surprising that so great a violation of an established botanical rule as is contained in the generic name Eschschóltz*ia* should have been so long permitted to remain. The rule to which we refer is, that two different genera should not both be named in honour of the same individual, or of the same family. Thus, for example, the name Linnæ'*a* must be held to commemorate both the elder and the younger Linnæus; and it would

not be allowable to establish a different genus Linnæ`*a* in honour of the latter. It is evident that nothing but confusion would arise from neglecting a rule of such plain utility.

" ' Now, in the present case, the generic name Eschschóltz*ia* has been previously appropriated to a genus among the Labiàtæ, and dedicated to the memory of Eschscholtz *senior*. This genus has been universally received; among others, by Mr. Bentham, in his recent arrangement of the Labiàtæ; and, consequently, the same name cannot be applied, with any propriety, to designate a different genus of the order *P*apaveràceæ, in commemoration of his son, Eschscholtz *junior*, the botanist who accompanied Kotzebue in his voyage round the world. It is true, that we find the former name spelled Elshóltz*ia* in botanical works, which appears to make a difference between them; but this has no better foundation than an error of the press; the two individuals to whom the genera are dedicated standing to each other, as we have already remarked, in the relation of father and son. It is time, therefore, that this anomaly should be removed from our nomenclature, and that the name should be preserved to the plant to which it was originally appropriated.

" ' This beautiful genus was first discovered by Menzies, in Vancouver's voyage. It might, therefore, with propriety have been named Menziès*ia*, had not that name been preoccupied.'

" Unwilling as I am to become a party to change the established names of plants, in consequence of the great inconvenience to which it generally leads, I cannot but feel that the foregoing observations are unanswerable." (*Bot. Reg.*, April.)

Onagràceæ.

1185. CLA'RK*IA* [379.
*gauröides *Doug. MS.* Gaura-like ○ pr 1 au P California 1834 S p.l Swt. Br. fl.-gard.

" A native of California, where it was discovered by the late Mr. Douglas, on his second visit to that country; and from seeds transmitted by him to the Horticultural Society plants were raised in the spring of 1835. Its claims to a place in the flower border will not stand in competition with its more showy congeners, C. pulchélla and élegans; but the plant is interesting to the botanist, as supplying a further link of connexion between Clárk*ia* and *Œ*nothèra. The plant is a hardy annual, growing luxuriantly in the ordinary garden soil, and ripening its seeds freely in the open border." (*Swt. Br. Fl.-Gard.*, April.)

Cactàceæ or *Opuntiàceæ.*

3359. ECHINOCA'CTUS
*sessiliflòra *Hook.* sessile-flowered ⊼ ▭ cu ½ ... Y Mexico 1836 O s.p Bot. mag. 3569.

Communicated to Dr. Hooker by Messrs. Mackie of the Norwich Nursery. " The beautiful, short, white, and distinctly placed fascicles of spines form a singular contrast with the dark green of the plant, and, together with the short and depressed

stem, readily distinguish it from E. Ottò*nis* Bot. Mag., t. 3107. It flowers freely, producing several blossoms every year."

" Mr. Frederick Mackie, whose skill and experience in horticulture are very great, observes that he is very successful in flowering the different species of Echinocáctus, by growing them " very near the glass, and, during the summer time, in a very high temperature, by keeping the upper glasses of the house close; strong light and heat being necessary for expanding their blossoms in perfection. Some of them will close immediately upon being removed to a cooler place. It is also very necessary to have the pots well drained, as the roots are liable to decay if the earth is at all sodden with moisture. I think that setting the free-growing species in poor soil is quite a mistake; for we invariably find that they thrive better in good soil, provided it be well drained, and if they are planted in small pots." (*Bot. Reg.*, April.)

*Gesner*àceæ.

1698. GE'SNER*A*
*laterítia *Lindl.* brick-red ⁂ ⍓ or 2 jn 1834 S Brazil O p.l Bot. reg. 1950.

" A native of Brazil, whence it was received by the Horticultural Society, in whose garden it flowered in June 1834. It is readily cultivated in peat and loam." (*Bot. Reg.*, April.)

Scrophulariàceæ.

1717. PENTSTE'MON [1946.
*brevifl̀orus *Lindl.* short-flowered ⅋ △ pr 2 s W. and P California .... D p.l Bot. reg.

" A Californian perennial, raised in the garden of the Horticultural Society, from seeds picked off some of Mr. Douglas's dried specimens. In its native country, it appears to be a stout branching plant, bearing a profusion of small white and purple flowers; but, when cultivated, it has been found so tender and difficult to manage, that little of its native beauty is developed." (*Bot. Reg.*, April.)

Primulàceæ.

458. *A*NAGA'LLIS 3851 Monélli
**lilácina* D. Don lilac-*flowered* ⅋ ⍓ or 1 my Li ... 1836 C p.l Swt. Br. fl.-gard. 377.

" Few plants make a more brilliant display in the flower-border, especially if planted in groups, than do the different species and varieties of this elegant genus, which is therefore deservedly a general favourite with the cultivators of showy flowers. The present very pretty variety was communicated in May last, by the Hon. W. T. H. Fox Strangways, from his collection at Abbotsbury Castle, Dorset. The colour of the flower is intermediate between *A.* Monélli and fruticòsa, which, we are convinced, are nothing more than mere varieties of one and the same species, having no other mark except colour to distinguish them. Indeed, botanists have been disposed to place too much reliance upon colour in this genus, in which it is an equally fallacious test of specific difference as in the other genera of Primulàceæ." (*Swt. Br. Fl.-Gard.*, April.)

*Begoni*àceæ.

2654. BEGO'N*IA* [mag. ix. p.111.
*monóptera *Otto* one-winged ⁂ ⧄ or 2 au W Brazil 1829 D 1p Bot. mag. 3564.; Gard.

"This is one of the many species of this handsome genus for which our stoves are indebted to M. Otto of the Royal Berlin Garden. It was introduced from Brazil to that collection in 1826, by M. Deppe." (*Bot. Mag.*, April.)

Orchidàceæ.

*ACROPE'RA *Lindl.* Acropera. (From *akros*, the extremity, and *pēra*, a small sack, or bag; from the little saccate appendage at the apex of the labellum.) [p.r.w Bot. reg. 3563.
*Loddigèsii Lindl. Loddiges's ⅋ ⧄ or ⅔ au.s Pale Yellow and Purple Mexico 1828. D
Synonyme: Maxillària galeâta *Bot. Cab.* 1645.

"A very singular epiphytous orchideous plant, introduced into the stoves of this country from Xalapa in Mexico, by Mr. George Loddiges; whence Dr. Lindley has been led to distinguish it by his name: a compliment which that liberal and able horticulturist well merits. The habit of the plant is quite peculiar: the racemes are quite pendent, and, in the state of bud, and after the first expansion, the long and regularly decurved ovaries are arranged in three rows." (*Bot. Mag.*, April.)

LÆ'LI*A* ánceps *Gard. Mag.* xi. 261.
var. *Barkerìàna Lindl. Barker's ⅋ ⧄ el 1½ d P Mexico 1833 O p.r.w Bot. reg. 1947.

"A native of Mexico, whence it was procured by Messrs. Low and Co. Dr. Lindley believes it to be common in some parts of that country, and that considerable quantities have been recently imported. The drawing was received from the rich collection of George Barker, Esq., of Birmingham." (*Bot. Reg.*, April.)

*TRICHOCE'NTRUM *Pöppig.* Trichocentrum. (From *thrix*, hair, and *kentrōn*, either a spur or a centre: but the applicability of the word is not apparent.)
*fúscum *Lindl.* brown-*flowered* ⅋ ⧄ cu ½ jl G.W.P Mexico 1835 D p.r.w Bot. reg. 1951.
Synonyme: Acoïdium fúscum *Lindl.*

Imported from Mexico, by Mr. Knight of the King's Road, from whom Dr. Lindley received it in flower in July of last year. It is a stove epiphyte, and, apparently, by no means of difficult cultivation. (*Bot. Reg.*, April.)

Monstrous Myánthus cristàtus. — "Accustomed as botanists now are to the freaks and masqueradings of nature, and to the strangest departures from all rules, at every step among orchideous plants, there is certainly nothing upon record to be for a moment compared with the case now before us. It is that of a plant of Myánthus cristàtus changing into a Monachánthus, related to Monachánthus víridis, and combining in its own proper person no fewer than three supposed genera: Myánthus, Monachánthus, and Catasètum."

"I doubt," says Dr. Lindley, "very much whether any one would have believed in the possibility of such transmutations upon weaker evidence than that I am about to produce. In this very *Botanical Register*, vol. xii. fol. 966., in April, 1826, is the following note under Catasètum cristàtum: —

" ' The unimportance of the peculiarity which exists in the labellum (namely, its flattened or fringed and crested state) is manifested in a singular manner by a curious monster of this plant, which we have observed on an individual in the Horticultural Society's Garden. Among flowers of the ordinary structure, two or three others were observed, in which the labellum was precisely of the same nature as that of Catasètum tridentàtum; that is to say, destitute of the crested appendage, and perfectly galeate and naked.'

" This, I repeat, appeared to me so extraordinary a statement, especially as, after seven years, it had never been corroborated by any other case of the same kind, that I concluded I must have made some mistake; and I accordingly formed the genus Myánthus out of a species nearly allied to the very Catasètum cristàtum which, in 1826, I had seen sporting back to C. tridentàtum.

" Not content with this, I added the genus Monachánthus, distinguishing it from Catasètum by the want of cirrhi on its column, and by its perianth being turned back; and, when the original species, M. víridis, was sent me from Wentworth, previously to publication in the *Botanical Register*, 1752., I felt no doubt of its being an entirely distinct plant. Even when Lord Fitzwilliam assured me that it was beyond all doubt an accidental sport of Catasètum tridentàtum, I still adhered to my idea that an imported plant of Monachánthus víridis had been accidentally taken for the latter common species. Nor do I think that, as a botanist, I was to be blamed for these errors; the genera being founded upon characters that were apparently important, and which, most assuredly, no one could, *à priori*, have suspected could pass into each other in the manner that has now been seen. If, however, it should be thought that I ought to have been aware of such metamorphoses, I at least have lost no time in acknowledging the mistakes, and putting others on their guard against them for the future.

" M. Schomburgh has lately sent to the Linnæan Society, from Demerara, a specimen of another Monachánthus sporting to a crested Myánthus; of which, I presume, some account will in due time be published. And I am acquainted with the following example of this tendency in a very different genus.

" In 1836, Mr. Wilmore of Oldfield, near Birmingham, sent me a specimen of Cycnòches, which had broad petals, a short column hooded and dilated at the apex, and a broad roundish lip gibbous at the base, and with its stalk much shorter than the column. It was, however, destitute of scent; while Cycnòches Loddigèsii has, as is well known, a delicious odour of vanilla. I had no doubt of its being a distinct species, and called it C. cucullàta. But, in the autumn of 1836, in the

garden of the Horticultural Society, a plant of Cycnòches produced from the opposite sides of the same stem two racemes: those of one raceme were the well-known fragrant flowers of Cycnòches Loddigèsii; and of the other, the scentless flowers of the new C. cucullàta." (*Bot. Reg.*, April.)

The circumstance of three kinds of flowers, so distinct as to have been considered by botanists as belonging to three different genera, being found upon one flower spike, is so very singular, that it ought to produce the greatest caution among species-makers; even in constituting species in those orders and tribes of hardy, herbaceous, and ligneous plants, with which every one is comparatively familiar. We recommend such of our readers as take an interest in matters of this kind, to study the article in the *Botanical Register*, along with the beautiful coloured plate which accompanies it.

REVIEWS.

Art. I. *Botanical Periodicals.*

1. *Sowerby's English Botany;* small edition, published in numbers, price 2*s.* each, every alternate Saturday. Nos. 165. and 166. have just appeared.
2. *Baxter's British Flowering Plants;* in 8vo numbers, 1*s.* plain, and 2*s.* coloured. No. 57. appeared April 1.

Our last notice of these works was in Vol. XI. p. 593. and 594.; and we take blame to ourselves for not having, before this time, repeated our very strong recommendation of them to the public. They are both executed in the most superior manner, both as regards letterpress and engravings; and they are both sold at a price so low, that nothing but a very extensive sale can remunerate their authors. Gardeners and others, who can at all afford it, ought to take in the one work or the other; for either will be of the greatest use to them, as long as they live and have any taste for plants; and if, at any time, they should wish to dispose of such a work, they will be able to do so for almost as much as it cost them. We refer to what we have said on this subject in our eleventh volume.

Art. II. *An Analysis of the British Ferns and their Allies, with Copperplate Engravings of every Species and Variety.* By George W. Francis, Author of a "Catalogue of British Flowering Plants and Ferns." 8vo, 68 pages, and 6 plates. London. Price 4*s.*

To the young gardener, who wishes to acquire a knowledge of British ferns, this work may safely be recommended, for its

accuracy, and for its cheapness. The engravings, which, as the titlepage expresses, exhibit every species and variety, are executed with extraordinary accuracy and beauty, by the author himself, from specimens in his possession. The following remarks on the soil, geography, and culture of ferns will interest every gardener: —

"*Geography.* — The distribution of the ferns in Britain offers nothing peculiar. They abound chiefly in the more woody and moist countries, are rarely found growing upon chalk, nor, except two species, near the sea: some affect the highest mountainous situations, others only swampy valleys. Our larger species luxuriate on the banks of ditches, in shady lanes; while the smaller and more filmy kinds are generally found in situations diametrically opposite to these, as on ruins, old walls, &c. As the latter stations cannot be natural to any plants whatever, we are bound to look for their real habitats in situations similar to these artificial ones, as on rocks and lofty banks; and here we find all our delicate species furnished with very long roots, to run into the interstices of the crags. Moisture and shade are equally necessary to all the fern tribe; they grow, therefore, for the most part in northern aspects, and on damp porous stones.

"*Soil and Culture.* — The soil which appears to agree best with the ferns is a mixture of leaf mould or bog earth, and sandy loam. There is some difficulty in transplanting them with success, and they are very impatient of the knife; so much so, that the common brakes may be entirely eradicated by cutting down the fronds as they arise for three or four years in succession. The species of Polypodium, Cistopteris, Scolopendrium, Blechnum, Pteris, and most of the genus Aspidium and Asplenium, when once established in a garden, thrive well in the borders or on rockwork. Their place of growth must not be too exposed; yet few plants suffer more from a contaminated atmosphere than this tribe. Cryptogramma crispa, Grammitis Ceterach, Aspidium Lonchitis, Asplenium lanceolatum, marinum, viride and septentrionale, seem to languish for their native freedom. They require the shelter of a frame or green-house to compensate for the purity of the air of their lofty or exposed homes.

"Ferns are easily propagated from the spores, nothing more being necessary than putting into a garden pot some stones or broken rubbish to within two inches of the top, covering these with an inch in depth of very finely sifted sandy loam, and then sowing the spores upon it, covering the whole with a flat piece of glass, and placing it in a green-house.

"*Virtues.* — The uses of the ferns are not very conspicuous. Their bitter principle renders them unpalatable to all creatures. Neither men nor brutes employ any species as an article of food, unless driven by the necessity of hunger; and even the little insects that infest the herbaria refuse to prey upon them. They are not, however, wholly useless either in medicine or the arts. Their nauseous taste renders them efficacious in expelling intestinal worms: some of them have been used as a substitute for hops in brewing, and with better success than most other plants, on account of the tannin and gallic acid they contain precipitating the feculent matter in the wort. The same constituent principle renders them also serviceable in preparing kid and other light leathers; and they yield much comparatively pure potass when burnt. The dried fronds of the common brakes are valuable to pack fruit in, and, as they retain moisture less, are much better than straw to shield garden plants from frost. Except for these uses, the British ferns have been little employed, unless, indeed, for those purposes to which most plants, when dry, are available; namely, for thatch, for fodder, and for fuel."

Art. III. *Illustrations and Descriptions of the Plants which compose the Natural Order Camellieæ, and of the Varieties of Camellia japonica cultivated in the Gardens of Great Britain.* The Drawings by Alfred Chandler; the Descriptions by William Beattie Booth, A.L.S. Folio, Vol. II. Part I. London.

The concluding part of vol. i. of this splendid work was noticed in our Vol. VIII. p. 211.; and, in introducing the first number of vol. ii., we have only to observe that the plates and the letterpress are of the same superior description as before. The colouring of the plates is so exquisitely beautiful, that it is superior to anything of the kind we have previously seen. We particularly admire the plate of Camél*lia* japónica Gilès*ii*, in the present number. It is a picture which every cultivator of the camellia might delight to frame, to decorate the walls of his library. The drawings are all by Alfred Chandler, and the colouring is executed under his superintendence; the engraver is E. S. Weddell, the artist who was employed on Mr. Lambert's splendid work, the genus *P*ìnus. The varieties figured in the present number are as follows: — 41. *Camél*lia *japónica Colvíll*ii *Swt. Br. Fl.-Gard.; Arb. Brit.*, p. 388. "A very fine variety, although, in our opinion, it scarcely deserves the high character given to it by Sweet." (p. 41.) — 42. *C. j. Beal*èii *Palmer* in *Chand.* Introduced by John Reeves, Esq., of Clapham, in 1831. The original plant came from Japan to Macao, in China, in 1828, and was exchanged for Chinese plants with Thomas Beale, Esq., by whom it was increased, and in compliment to whom it was named by Mr. Palmer. Mr. Beale has been upwards of forty years in China, and has been indefatigable in collecting rare and beautiful plants, and sending them to England. The leaves of C. j. Beal*èii* resemble those of Rawes's variegated waratah, *Arb. Brit.*, p. 387. The flowers are showy, though not very double; and they are about 4 in. in diameter. They are of a fine clear red, and composed of four or five rows of nearly equal-sized petals. The outer ones, 1 in. or 1½ in. broad, being cupped and curved at the edges, resemble so many small red-coloured shells, and give a feature which is of itself sufficient to characterise this variety. — 43. *C. j. Gilès*ii *Chand.* Raised in 1826, from seed of the waratah, by Mr. William Giles, gardener to John Dodson, Esq., of Clapham, after whom it is named. The plant is weaker and more pendulous than the parent; but it grows freely, and is not so liable to lose its buds as some of the other kinds. The leaves are large, ovate-oblong, and pointed; but not flat and thick, like those of the waratah. "The flowers, though liable to vary, are, when well striped, remarkably showy; being of a fine dark red colour, with the white very clear and distinct, and from 4 in. to 5 in. in diameter. Sometimes, like the flowers of the double-striped, they come

entirely of a deep red, without any white; but their most usual character is to have nearly as much white as red." — 44. *C. j. Párks*ii *Trans. Hort. Soc.*, vol. vii.; *Arb. Brit.*, p. 386. "We consider it a very handsome and well-marked variety, and the only one we are acquainted with, besides the myrtle-leaved, which is distinguished for fragrance as well as beauty."

ART. IV. *A Catalogue of Herbaceous Plants cultivated and sold by John Cree, Addlestone Nursery, Chertsey, Surrey; with numerous Synonymes, and References to Figures in the leading Botanical Periodicals; and also a select List of Fruit Trees, with Descriptions.* Small 8vo, 94 pages. Price 3*s.*

AN excellent little pocket catalogue, rendered valuable by the authorities being given to all the names; by the addition of the synonymes, with their authorities; and by reference to the figures contained in the English botanical periodicals. Letters are also placed after each species, indicating those which prefer heath soil, require protection from frost, are suitable for rockwork, &c. There is a list of ferns, of aquatic perennials, of bulbs, Orchídeæ, &c.; and the fruit lists are arranged in tables, with brief descriptions. On the whole, this is a very desirable catalogue; and it will be found very useful for those having private collections, which they wish either to have named or numbered with scientific accuracy. The naming of plants, in a private collection, adds very greatly to the enjoyment which they afford, both to the possessor and his visiters; and there are very few cultivators in the neighbourhood of London so competent to undertake this task as Mr. Cree. We wish, indeed, it were customary to call in the aid of practical botanists, like Mr. Cree, to name not only herbaceous plants, but ornamental trees and shrubs, and fruit trees, in every garden in which its proprietor took an interest.

ART. V. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

RELIEF for Agricultural Distress: a Locomotive Plough and Harrow; with proffered Advice to all Landlords, Tenants, and Labourers. By George Whitley, Esq., Inventor and Patentee of the Steam-Plough. Pamph. 8vo, 24 pages. London. Price 1*s.* 6*d.*

THIS may truly be called a catchpenny pamphlet: there is no evidence in it that the author is either an inventor or a patentee

of a steam-plough; and, in short, the tract is altogether contemptible.

Observations on the present State and future Prospects of Agriculture, illustrative of the Advantages of an Experimental Farm, being a fuller Developement of the Author's Views, first made public in a Communication addressed to the Highland Society of Scotland. By George Lewis, Tenant in Boglillie, near Kirkaldy. 8vo, 123 pages. Price 2*s.* 6*d.*

This work has been reviewed in the *Quarterly Journal of Agriculture*, in which the reviewer draws a comparison between an experimental garden and an experimental farm, and arrives at the conclusion that, if an experimental farm were conducted on the same principles as an experimental garden, the same results might be confidently anticipated. We have no great faith in either, as far as respects the conducting of experiments, or originating new practices; but we think both calculated to be useful, by exhibiting, collected in one place, what may be called the materials of the respective arts: for example, masses of the different kinds of soils, specimens of all the different kinds of plants, of the different breeds of animals, and models or examples of the different kinds of implements, machines, and buildings. The exhibition of the different kinds of plants and animals, however, would be the chief good; because machines, buildings, &c., might be exhibited in models. As to teaching the practice of farming to young men, there seems to be no reason for deviating from the common practice, in gardening, carpentry, and other arts; and the science, or principles of the art, can never be better (that is, more usefully) obtained than from books. Young men may be drilled into rules, but principles can only be obtained through the exercise of reason. Such is our opinion, formed after having seen two or three experimental gardens, including the Paris garden, which, under Thouin, was the first in the world; and all the principal experimental farms, colleges of agriculture, &c., in France, Germany, and Italy. Nevertheless, good will arise from discussing the subject; and Mr. Lewis deserves the best thanks of the agricultural public for having brought it forward in so respectable a shape. The farmers of Scotland, till within a very recent period, have paid very little attention to either the physiological or chemical principles of their art.

ART. VI. *Literary Notices.*

THE Orchidaceæ of Mexico and Guatemala. By James Bateman, Esq. To be completed in ten parts, elephant folio. Price 1*l.* 11*s.* 6*d.* each, or 15*l.* 15*s.* the entire work.

Each part will contain five beautifully coloured figures of some of the most interesting species, after drawings by Miss Drake, and other eminent artists; and the subjects selected for representation will be either entirely new to science, or such as have not previously flowered in the collections of Great Britain. The figures will be accompanied by scientific descriptions (both Latin and English), and a popular account of the habits of the species in a wild state, as well as directions for their treatment in a state of cultivation. Vignettes, illustrative of the scenery in which the plants are found, and of anecdotes connected with them, will also be introduced. As the publication advances, a "Treatise on the General Management of Tropical Orchidaceæ" will be given; and with the concluding parts there will appear a "Synopsis of the Orchidaceous Flora of the Countries comprehended within the Plan of the Work." The first part is expected to appear in May, and the remainder at intervals of five months each.

It may be well to state that the author's work will in no respect interfere with the splendid *Sertum Orchideum* of his friend Professor Lindley, an arrangement having been made between that gentleman and himself, that the same species shall not be figured in their respective publications.

It is highly gratifying to see a man of property, like Mr. Bateman, engaging in intellectual pursuits in his youth. The splendid work which he has undertaken may occasion to him a loss of a few hundred pounds; but not more than gentlemen of his own rank and age are daily throwing away on the turf, or at the gaming table. How different are the impressions left on the mind in the one case and in the other! Even supposing Mr. Bateman, or any other private gentleman, to ruin himself, as it is called, by the publication of a splendid work, as several botanists have done, and some even noble authors; still, there would be nothing in the slightest degree repugnant to the highest tone of moral feeling, either in the reflections of the individual, or in those of his friends, relative to his conduct; unless, indeed, he had acted immorally towards others. He might consider the monument he had raised to his memory as one which had, perhaps, cost too much; but still as a splendid and honourable monument, which, though it had injured himself, had done good to mankind.

Handbibliothek für Gärtner und Liebhaber der Gärtnerei; or, a Pocket Library for Gardeners and Amateurs of Gardening; is about to be published at Berlin, conducted by M. Lenné, Royal Garden Director. The work will be in six parts: 1. Science, by Dr. Dietrich and M. Legeler, court gardener; 2. Culinary Gardening, by M. Nietner; 3. Arboriculture, including Or-

charding, by M. C. Fintelmann; 4. Floriculture, by F. r. Buche, commercial flori[illegible] 5. Forcing, by M. Nietner; and, 6. Landscape-Gardening, by M. Lenné.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Value of Specific Characters. — M. Wiegmann, in a letter addressed to the conductor of the botanical periodical called the *Flora*, communicates some observations which he has made on this subject. The results which he obtained are not at all favourable to the opinion of those authors who elevate to the rank of a species slight differences in form, commonly produced by the influence of the climate or the locality. Some genera, of which many species are cultivated in gardens, such as *Verónica*, *V*erbáscum, *D*elphínium, *T*halíctrum, &c., contain many species of which the native country is unknown. Certainly, however, the change which culture produces, and the numerous hybrids to the production of which botanic gardens are so favourable, from the proximity of the species of a genus, may easily explain the origin of some hundreds of species in our catalogues.

In 1833, the author saw a plant of *A*llium *C*èpa bearing a bulb in the place of seeds. In the following spring he planted the bulb; and his astonishment was great when he saw, shortly after, springing up in his garden *A*llium proliferum of Schrader and Sprengel, with a naked, flexible, weak stem, a proliferous umbel, and barren flowers on long footstalks. M. Wiegmann cites the numerous forms of *I*ris obtained by M. Berg; and the multiplicity of calceolarias, and other ornamental plants, as examples of these pseudo-species.

To this we may add the fact stated by M. Soyer-Willemet (*Bon Cultivateur*, Dec. 1835), that various forms were obtained from the seeds of Fúchsia globòsa.

M. Wiegmann, in noticing the results obtained by M. Koch from the cultivation of seeds of *T*aráxacum palústre (which results are communicated in *Ann. des Scien. Nat.*, ii. p. 119.), informs us that similar experiments made by him in 1828 furnished the same results; but that he was unwilling to publish them, fearing lest his observations should have been incorrectly made. The seeds of *M*yosòtis sylvática *Ehr.* were sown by the author in the same locality, and produced five different sorts; and those of *Verónica* agréstis gave birth to six different sorts. It is to be regretted that the author has not pointed out the names of the species thus obtained; for, in the case of *M*yosòtis at least, this appears to us of considerable importance. He thinks that the numerous species of *R*ùbus of Weihe have been produced in the same manner. (*Flora*, 1835, p. 106, as quoted in the *Annales des Scien. Nat.*, 2 s., tom. v. p. 377.)

Conservatory. — The following article on this subject is from the *Penny Cyclopædia*, vol. vii., just published, and bears internal evidence of being written by Dr. Lindley. To the scientific gardener, it will lead to very interesting and useful reflections; though to the mere practical man it will be, to use the concluding expression of the article, "only a waste of words." "The names given to the garden buildings employed for preserving plants in an artificial climate are applied with so little precision, that it is almost a matter of indifference which to select for the purpose of explaining the principles that ought to be observed in the construction and management of such houses. We shall therefore reserve for the article Green-house what we have to say upon that head, and briefly dismiss the others as their names occur. In illustration of this remark, we may observe that the term conservatory, which, as its meaning shows was originally intended for buildings in which plants were preserved during winter ,has come to be used, firstly, for glass houses, in

which plants are cultivated by growing them in the open border, and, subsequently, for all such glazed buildings whatsoever. A conservatory, properly so called, is a brick building heated by artificial means, having its whole southern part enclosed by large glazed sashes, which may be opened or shut at pleasure. Its floor is generally of stone, and a part of it is occupied by a stage, on which plants in pots can be placed. One of these buildings, but in a ruinous state, may be seen in the Physic Garden at Chelsea; others are not uncommon in gardens that were laid out forty or fifty years ago; but they are fast falling into neglect and disuse, in our opinion, undeservedly. Such a conservatory was intended to preserve during the winter orange trees, myrtles, American aloes, and similar plants, which, during the summer, will flourish in the open air, but which require, in winter, to be protected against the inclemency, or, to speak more exactly, against the cold and wet, of the English climate. Such plants are torpid during winter: their rest begins with that of our trees; and it is easy to prevent a renewal of their growth at too early a time. To preserve them against too much wet, and from severe cold, especially in the spring, is all that is requisite for them; and these objects the old conservatory answered perfectly well. It had, moreover, the advantages of being spacious, without being excessively costly; of being easily heated; and of requiring the smallest possible amount of labour for the plants preserved in it. Persons, however, gradually forgetting the original object of a conservatory, added to it numerous species requiring a very different treatment in winter, from those it was contrived for; and, what was far worse, they attempted, by humidity and high temperature, to keep the plants in a growing state all the winter. The necessary consequence of this was, that those plants which formerly succeeded in the conservatory became unhealthy; the new comers disappointed the expectations of their cultivators; and the building itself fell into discredit. The reason of this is sufficiently obvious: plants, when in a growing state, require an abundant supply of light. A conservatory is particularly ill calculated, on account of its solid roof and sides, for the admission of light; and, consequently, a conservatory is not suitable for plants in a growing state. But plants, when torpid, as in the winter season, require a very moderate supply of light, and this a conservatory is sufficiently calculated to admit.

"A house of this kind is best suited for gardens of considerable extent, where a large number of plants is required, during the summer, for the ornament of the flower-garden and shrubbery. Under such circumstances, we strongly recommend the erection of conservatories, as the cheapest, the most efficient, and the most ornamental mode of preserving in a healthy state, during winter, not only oranges, myrtles, and similar plants, but, in general, all the species which are natives of countries that, without experiencing severe frost, are cold enough during winter to suspend the vital energies of vegetation. It will be perfectly within the gardener's power to keep the earth in which conservatory plants grow sufficiently damp, during winter, to enable them to accumulate, by the return of spring, an abundant supply of new sap; and this is all that he need be particularly reminded of, if he understands his business scientifically: if he does not, advice to him would be only a waste of words." (*Penny Cyc.*, art. Conservatory.)

Budding's Grass-cutter. — I mean to say a word on that very ingenious contrivance, Budding's grass-cutter, which I have used all through the summer, and still continue to use. The truth is, the use and value of this implement do not appear to me to be so well understood as they deserve to be. The general idea is, that, when a grass plot becomes rough with worm-casts, which it will do in the autumn, it is utterly hopeless to attempt to keep it in order; and so, I grant, it would be, were there nothing but the scythe to depend on for cutting it. But with Mr. Budding the case is widely different; for the wetter grass is, the better it seems to cut; and, as to the earth thrown up by the worms, it appears to put an edge on the knives, rather than injure them. I speak from experience; for I always work mine myself. I have added a scraper to the main or iron roller; and, when the knives get clogged with dirt,

I take the machine to the pump, and, turning them briskly the contrary way, clean them better in half a minute, than, by scraping them, I could in half an hour. Of Mr. Budding I know nothing; and, therefore, all I have said or may say on this subject is perfectly disinterested. I believe that I shall be the means of selling him several machines here, and chiefly from the use I am seen to make of it in the winter months. My garden, as, I think, you are aware, abuts upon the turnpike road; and I am seen at work by every body passing. If there should be any point on which, in your opinion, Mr. Budding could give me information, so as to promote the sale of this very valuable invention, perhaps he would do it by letter. I had mine from Willett of Lynn. — *Samuel Taylor. Whittington, Stokeferry, Norfolk, Nov.* 23. 1836.

A Stage for Green-house Plants on a new Plan. — This stage is erected in an old pine pit. Having procured eight posts, I had the middle of them cut out 3 ft. downwards, and 2½ in. wide, so as to allow the rafters to pass through them; a hole being made through each end of the rafters, and also through the posts, for pegs to pass through, to fasten the posts and rafters together. There are holes at different distances down the posts, so that the rafters can be lowered at pleasure, by taking out the pegs, and lowering them to the next hole, and so on to the depression of 4 ft. 6 in. The first hole is 1 ft. 6 in. from the glass. There are also brackets placed on the rafters for shelves. The whole can be moved higher or lower in the space of a few minutes. — *G. M. Faringdon House, Faringdon, Berks, Nov.* 24. 1836.

Trees and Shrubs of the Canary Islands likely to prove hardy or half-hardy in the Climate of London. — In the parts just published of the *Histoire Naturelle des Iles Canaries*, by P. Barker-Webb and S. Berthelot, are beautiful engravings of the following species: — *A*nagỳris latifòlia, t. 40.; *G*enísta spléndens, t. 43.; Polycárpia carnòsa, t. 22.; *C*érasus *Híxa*, t. 38.; a splendid kind of Portugal laurel (see *Arb. Brit.*, p. 714.); *G*enísta microphýlla, t. 42.; *G*enísta stenopétala, t. 45.; and *S*empervìvum Goóchiæ, t. 32. The views of entire trees in this work, given under the head of Facies, are exquisitely beautiful. *S*ónchus fruticòsus, a seventh part of the natural size; and Prenánthes arbòrea, a ninth part of the natural size, in the Atlas, pl. vi., are very singular and beautiful objects; but still more so are Adenocárpus frankenioìdes, and la Retama bianca, the white broom (*Cý*tisus nubígenus: see *Arb. Brit.*, p. 602.), in pl. ix. These two shrubs are perfectly hardy, growing at the height of from 6000 ft. to 8400 ft. above the level of the sea. In a *Vue Phytostatique*, which forms pl. vii. of the Atlas, an immense plateau is shown, partially covered with these shrubs, and showing several bee-hives formed of sections of cork bark; the retama being singularly productive of honey, and that of the Canaries being celebrated. Bœhmèria rùbra and *O*'lea excélsa (Facies, pl. xi.) are interesting objects; and more particularly so *J*uníperus *C*èdrus *Webb et Berthelot, Vue Phytostatique*, pl. viii. fig. 1., which we shall, probably, have copied for the article Juníperus in the *Arboretum Britannicum.* — *Cond.*

Management of Plantations. — Mr. Major, landscape-gardener at Knosthorpe, near Leeds, strongly impressed with the importance of thinning plantations with a view to ornament, has sent us a long paper on the subject; and, as we are not likely to have room soon for it, we give the following as the essence of what he recommends: — 1. " Choose such trees as are likely to remain where they are planted; and, at each successive thinning, clear off a few of their lower branches, till a clear stem is formed to the height of 5 ft. or 6 ft., or to a greater height in trees having pendent branches, such as the wych elm, lime, &c. 2. Cut down all the trees which are not intended finally to remain, by degrees." —*J. Major. Knosthorpe, near Leeds, Dec.* 7. 1836.

Tulips, when raised from seed, require a peculiarity in management, which would not readily occur to any cultivator, who was not either a vegetable physiologist, a reader of books on florists' flowers, or a tulip-grower of great experience. The young bulb of the tulip is formed on the radicle which descends from the seed; and, when the seed is sown in a bed or in a deep pot of light free soil, the radicle will often penetrate to the bottom of the pot or

bed, and scarcely produce any bulb at all. The same thing takes place with the different species of bulbous *Iris* when raised from seed, and, to a considerable extent, with seedling bulbs of every kind. In order to prevent this, and to cause the radicle to exhaust itself in the form of a bulb, instead of in the form of a long slender root, the seeds should be sown in pots or pans, not above 3 in. or 4 in. deep; or, if in beds, a bed of slates or tiles should be formed 3 in. or 4 in. beneath the surface. When this is properly attended to, the bulbs produced by seedlings the first year will be as large as those of three years' growth, where no stop was given to the descent of the roots. This doctrine is very well illustrated by an engraving in Smith's *Florist's Magazine*, vol. i. p. 88.

Art. II. *Foreign Notices.*

FRANCE.

The Climate of Montpelier as compared with that of Toulouse. — M. Raffeneau Delille, director of the Botanic Garden at Montpelier, has published, in the last numbers of the *Bulletin de la Soc. d'Agric. de l'Hérault*, some observations which show that the climate of Montpelier is not warmer than that of Toulouse, and that the winters there are more rigorous than in Avignon; for many plants that endure the open air in the latter town were frozen at Montpelier in 1820, 1830, and 1835.

M. Delille states that, on Nov. 11., a strong north wind began to blow; and that, during the following days, the frost was very severe. On the 14th, snow fell plentifully; and, at midnight on the 16th, the thermometer stood at 11° below zero in Réaumur (7° Fahr.); and even the *Quércus vìrens*, the arbutus, the cypresses, and the olives, suffered severely.

Among exotic plants which were in the open air in the Botanic Garden, M. Delille mentions the following, as having totally perished: — *Acàcia dealbàta*, and *A. farnesiàna*, *Aloe fruticòsa*, *Cápparis spinòsa*, *Cássia corymbòsa*, *Casuarìna equisetifòlia* (which perished at 20° Fahr.), the orange, the citron, *Cròton sebífera*, several figs (*Fìcus Cárica*), *Lavátera arbòrea*, young plants of *Mèlia Azederách*, *Opúntia Dillènii*, *Aristotèlia Mácqui*, *Búddlea salvifòlia* and *B. salicifòlia*, &c. Others have only some of their branches or stalks frozen, and sprang up again from the roots; such as the *Acàcia heterophýlla* and *A. Julibríssin*, *Aster carolinìanus*, *Técoma capénsis* and *T. grandiflòra*, *Búddlea globòsa*, *Ceratònia Síliqua*, *Fìcus Dumónt*ia, *Hypéricum baleáricum*, *Jasmìnum revolùtum*, *Meliánthus màjor* and *M. mìnor*, the common myrtle, the pomegranate, *Pyrus nepalénsis*, *Schìnus Mólle*, *Sophòra secundifòlia*, *Aloysia citriodòra*, &c.

Cèreus peruvìànus, *Vìtex Agnus cástus*, and *V. incìsa*, *Sempervìvum arbòreum*, *Bérberis asiática*, *Wistària Consequàna*, *Pittósporum sinénse*, and a few other plants, natives of a southern climate, have, on the other hand, stood out. (*L'Hermès*, Jan. 14. 1837.)

The Formation of Cork. — M. Dutrochet communicated, at the last meeting of the Academy of Sciences, the results of his observations upon the formation of cork in various plants. Cork is generally supposed to be produced by a superabundance in the layer of cellular tissue, exterior to the fibrous layers of the bark, as in the *Quércus Súber*; but M. Dutrochet states that, according to his observations, this substance has a different origin. The external coating of vegetables is composed of two parts: 1st, the epidermis, or cuticle, an extremely thin membrane, without any discernible organisation; 2dly, of a second membrane, composed of small cells, which was for a long time confounded with the epidermis, but has been very clearly distinguished from it by M. Adolphe Brongniart. This membrane, which M. Dutrochet has denominated the *tégument* or *peau cellulaire*, increases in thickness by the production of new cells upon its interior surface. According to him, it is this

centripetal developement that produces the cork. The parenchyma of the bark has no share in the production of this substance, unless we consider it as furnishing liquid nourishment, for the extraordinary developement of the cellular tissue. It is proved, by this mode of growth, that cork is entirely composed of transverse rows of small cells, of which the oldest are on the outside, and the last formed on the inside. The tissue formed by their assemblage is disposed in layers. Each of these layers corresponds to one year's growth.

There is also a variety of the elm which produces cork; but it is only found on the branches, which are from eight to ten years old. After this age the production of cork ceases. It is particularly in this sort of cork, which differs little from that of *Quércus Súber*, that M. Dutrochet has observed the mode of growth of this substance.

The interior of the prickles upon roses and brambles is occupied by true cork, of the same nature as the preceding. The same is the case in the prickles of Xanthóxylum *juglandifòlium*. Among monocotyledonous plants, we find an instance of the production of cork in the *Tàmus elephántipes*. It is upon the enormous rootstock of this plant that the formation takes place; and it is absolutely the same as other cork. (*L'Hermès*, Jan. 14. 1837.)

A hybrid Apple. — M. Legall, president of the Society of Science and Arts of Rennes, has made known a very extraordinary instance of hybridity. It occurred in a variety of apple sprung from seeds probably fecundated by the pollen of a variety different from that which bore the flower. These apples were grown at the Château of Brequigny: they are very large, and somewhat oblique at their base; of a fine red on one side and yellowish or greenish on the other. The two sides are of unequal thickness, and have a different odour. The flavour is also different; that of the red side being acid, whilst that of the yellow side is very sweet. It may be called an apple formed by the union of half a sweet apple, and half a sour apple. The seeds are scarcely ever perfectly developed, as in most hybrids; being commonly reduced to the envelopes, which, however, are very thick. (*Id.*, Jan. 14. 1837.)

GERMANY.

Palms for Sale at Hamburg. — Messrs. Ecklon and Zeyher collected many plants of Encephalártos in South Africa in 1835; and the following species are now at Hamburg for sale, at prices varying from 50 to 1200 marcs, according to the size of the plants: —

Encephalártos Frederìci Guliélmi Lehm., from 1 ft. 8 in. to 8 ft. 2 in. high; from 3 ft. 4 in. to 4 ft. 3 in. in circumference; price from 200 to 1200 marcs.

E. Altensteínii Lehm., from 5 ft. 2 in. to 10 ft. 6 in. high; from 3 ft. to 4 ft. 3 in. in circumference; and price from 300 to 1000 marcs.

E. Cáffer *Lehm.*, from 4 ft. 1 in. to 9 ft. 7 in. high; from 3 ft. 6 in. to 4 ft. 10 in. in circumference; and price from 400 to 700 marcs.

E. hórridus *Lehm.*, from 1 ft. 4 in. to 2 ft. 7 in. high; from 2 ft. 6 in. to 3 ft. 5 in. in circumference; and price from 50 to 200 marcs.

E. púngens, from 2 ft. 5 in. to 2 ft. 9 in. high; from 2 ft. 9 in. to 3 ft. 4 in. in circumference; and price from 200 to 250 marcs.

These are the dimensions of the naked stems, without any leaves; the plants being at present lying in a dry room, and, consequently, in a fit state for transportation. A marc is nearly 1*s.* 3*d.*

Art. III. *Domestic Notices.*

ENGLAND.

The Pópulus víridis Hort., *P.* nìgra var. víridis *Arb. Brit.*, p. 1652., I believe to be a native of Suffolk, and to have been first discovered by a person of the name of Nurse, who lived at Bealings, near Woodbridge. Whether he

is now living, I cannot say, or he could furnish you with all particulars. We have grown it, I should think, twenty years; which is, probably, as long as it has been cultivated; but of this I am not certain. It is distinguished by its bright green leaves (from which it takes its name), and also by the light colour and smooth round wood of the young shoots. — *Frederick Mackie. Norwich Nursery, Dec.* 1836.

Acácia and Eucalýptus in the Norwich Nursery. — The acacias are looking well, and are covered with flower buds. One of them lost its leader last winter, which somewhat spoils the appearance of it; but it has made a vigorous growth this season. I have tried a good many species of Eucalýptus abroad; but I think none will stand our winters so well as the E. alpìna. It grows much slower than any of the others; and its wood, therefore, gets better ripened. Both E. robústa and E. resinífera have had their younger shoots injured this autumn; but E. alpìna looks as well as it did at midsummer. It grows on the highest parts of Mount Wellington, and was thence sent to me by James Backhouse. — *Id.*

Growing Grapes in the open Air in Herefordshire. — Mr. Moss, gardener at Eastnor Castle, is one of the best and most successful grape-growers in England, both in and out of doors. He had 500 lb. of grapes last season, from a black Hamburg vine; the circumference of the stem of which, at the collar, or surface of the ground, was under 4 in. In 1835, the crop on the same vine was equally as heavy. Mr. Low of Clapton, and many other nurserymen, saw both crops. In 1833, I had three bushels of bunches of the espérione grape on one plant, in the open air, 12 years old, and 5 in. in the circumference of its stem: several of the bunches were 2½ lb.; and it has produced equally good crops since. The border was neither dug nor dunged in any way whatever for the last eight years. The above is adduced in order to afford me an opportunity of saying that I do not think that the circumference or diameter of the stem of a vine has anything at all to do with the weight of crop that vine is capable of producing. Mr. Moss, Mr. Brown, gardener at Stoke Edith Park, and several other gardeners in this neighbourhood, are all of the same opinion; but all of them approve of Mr. Hoare's *Treatise on the Vine* in every other respect but this. — *D. Beaton. Haffield, near Ledbury, March* 24. 1837.

Trimestrian, or Three-month, Wheats. — I am persuaded that the term trimestrian is not applicable to wheats grown in any of our British climates. The shortest time in which I have raised wheat by culture, adapted for the general purposes of husbandry, has been 154 days, instead of 90 days, the trimestrian period. I suspect, however, that most kinds of wheat will ripen in six months, if judiciously treated. — *John Le Couteur. Bellevue, Jersey, Feb.* 27. 1837.

Col. Le Couteur informs us that his collection of wheat in actual cultivation, consisted of more than 150 varieties or subvarieties, previously to receiving the 54 sorts which, through the kindness of M. Vilmorin (see p. 45.), we were enabled to send him. Col. Le Couteur has lately published a small work *On the Varieties, Properties, and Classification of Wheat*, of which a very interesting notice will be found in the *British Press* for Feb. 24., and another in the *Scotsman* of Feb. 8. Col. Le Couteur being in correspondence with Mr. Lawson of Edinburgh and M. Vilmorin of Paris, all his sorts of wheat will speedily be tried by the best cultivators in Europe. When an amateur cultivator, such as Col. Le Couteur, is seconded by tradesmen so scientific, so ardent, and so extensively connected, as Mr. Lawson and M. Vilmorin, the greatest good to society is likely to be the result. — *Cond.*

SCOTLAND.

Botanical Society of Edinburgh. — *March* 9. Professor Graham, who was in the chair, alluded to the flourishing condition of the Society, which, although not yet a year old, had enrolled above a hundred members, exclusive of the British and Foreign honorary members recently elected. After

various donations had been noticed, a paper was read by Mr. Nicol, "On the Microscopic Structure of the Wood of various Species of *Rhámnus*," showing that, in numerous instances, marked peculiarities of internal structure bore reference to obvious external characters. The paper was illustrated by several beautiful drawings, prepared by Mr. James M'Nab. A paper was also read from Mr. Shuttleworth, containing an account of a botanical excursion to the Alps of the Valais, Switzerland.

March 17. being the anniversary of the Society, between twenty and thirty of the members supped together at the British Hotel; Professor Graham in the chair, Dr. Walker-Arnott, croupier. It was arranged that the future anniversary meetings of the Society should take place on the second Thursday of March, and that the president should prepare for each occasion a report of the progress and state of botany in Britain. (*Edin. Advert.*, March 21.)

Flora Perthensis. — The writer of botanical notices in the *Perth Courier*, who is generally understood to be Mr. Robertson, the very intelligent gardener at Kinfauns Castle, contemplates publishing soon a flora of the plants in the neighbourhood of Perth. From the varied economical and practical knowledge of the author, we have no doubt he will make it a very interesting work. — *Cond.*

Art. IV. *The West London Gardeners' Association for mutual Instruction.*

Having formerly sent you a copy of the rules of the West London Gardeners' Association, I now send you, by order of the committee, a short abstract of the minutes of the Society since it has met regularly. — *R. Fish, Secretary. March* 4. 1837.

Dec. 5. 1837. The first discussion took place, when the first part of Mr. Fish's essay was read, showing the importance of general and scientific knowledge, from a consideration of the improvements which have already been effected, and the general interest felt for gardening pursuits. A very animated discussion followed; but the objections brought forward were introduced more for the purpose of tempting discussion, than from a belief in their validity.

Dec. 19. The latter part of Mr. Fish's Essay was read, showing the importance of the possession of general and scientific information by gardeners, from a consideration of the means by which improvements were likely to be effected; and, also, from a consideration of the doubts and uncertainties under which they still labour. Mr. Acton expressed his general approval of the essay; dwelt upon the importance of gardeners being acquainted with literature as well as with science; and, above all, on the importance of making our knowledge subservient for the purpose of effecting good. He reprobated the cruel custom of torturing insects; and contended that gardeners might attain a sufficient knowledge of entomology from books. Mr. Fish contended that books were but a secondary means of obtaining knowledge, when compared with practical investigation. Mr. Russel mentioned a remedy for the turnip fly (turnip flea-beetle); namely, rolling the ground early in the morning, which crushed the beetle, which was at that time reposing in the hollow of the clod. Mr. Plunkett considered, that the only benefit that could arise from rolling, would be from the grit and dust left upon the plant by the roller, which would prevent the beetle from lodging upon it. Mr. Hardie mentioned a remedy which he had always found effectual; namely, watering the young plants with an infusion of the leaves and stalks of the elder. Mr. Gibbs had been long conversant with the practice of rolling, but considered it very ineffectual. Mr. Acton gave a recipe for destroying the thrips upon small plants, namely, enclosing them in a glass receiver, along with a piece of camphor in spirits of wine, when the fumes of the camphor would have the desired effect. Mr. Bailie detailed a very interesting experiment, by which a large bell-glass, set air-tight over some orchideous plants, was burst by the expansion of the air within it, when exposed to the full influence of the sun. An interesting conversation followed,

respecting the growing and transporting of plants in close glazed cases; the vitality of seeds; the vegetating of white clover after the fires made by gipsies in their encampments, and the appearance of cruciferous plants, after great conflagrations in town.

Jan. 2. 1837. Exhibited, some fine specimens of French pears, and also some Ribston pippins, and other apples, by Mr. Plunkett, gardener to Dr. Sutherland, Otto House, Hammersmith. An essay was read by Mr. Russel, "On the Advantages we derive from the Cultivation of the Soil." Mr. Russel commenced his essay by referring to the prevailing opinion, that man, at first, existed as a rude and savage being, depending upon the chances of the day for his support; that a great advance in civilisation was made when man began to cultivate the soil, thus evidencing the presence of forethought; also, that agriculture ameliorates the climate, prevents extremes of heat and of cold, of heavy rains and excessive drought; and banishes famine, with all its evils, from a land. Mr. Fish contended that the savage state, instead of being the foremost state of man, existed only among those who had wandered or been banished from society; that the art of cultivating the soil preceded the keeping of flocks and of herds; and that the latter must have been contemporary with hunting: that the mere cultivating of the soil exerts a very secondary influence in promoting civilisation, as countries, hitherto agricultural, without cities and without commerce, have been inhabited by despot rulers and by abject serfs; but that, undoubtedly, agriculture, arboriculture, and draining have effected much for the climate of our country, and the salubrity of its atmosphere.

Jan. 16. 1837. Exhibited, good specimens of apples, by Mr. Underwood, gardener to W. King, Esq., Hamlet House; also some good pears from the Duke of Devonshire's, Chiswick House. Mr. Bailie took occasion to remark that the Easter beurré, and other Flemish pears, were superior for kitchen use to the Uvedale, St. Germain, and other baking pears.

Jan. 30. Exhibited a bunch of Russian violets, by Mr. Bailie, Hammersmith. Mr. Russel read a continuation of his essay, which was similar in matter to the former part. He adverted to the happiness enjoyed by man in different climates, in proportion as his energies were exercised; and, following up his former remarks, contended that the presence of corn in a country indicated the high civilisation of that country; and instanced the finding of wheat in the pyramids of Egypt, as attesting the high state of civilisation which that country had then reached. Mr. Fish, in addition to other remarks, contended that the very existence of these pyramids, reared with immense labour, without one principle of utility, furnishes an incontrovertible proof of the low state of civilisation which then existed. Mr. W. Knight adverted to the condition of the natives of America, as a proof that cultivating the soil was not always associated with anything worthy of the name of civilisation. Mr. Caie considered that, where education and civilisation existed, the proper cultivation of the soil would follow. Mr. Parrot contended that civilisation had been more indebted to the mechanical orders, than to the cultivators of the soil. Mr. Keane followed up his former remarks, by speaking on behalf of the beneficial influence which the cultivation of the soil exercises in promoting civilisation.

Feb. 15. Mr. Keane read an essay "On the Necessity of understanding the Properties of Soils, as affording the best Clue to the Cultivation of Fruits and Vegetables." Mr. Keane commenced with referring to some opinions of Sir Humphry Davy; then hinted at the pleasure which chemistry affords when the first difficulties are got over; adverted to the fact, that simple earths will not sustain vegetable growth; and noticed the means by which an undue preponderance of any ingredient may be known and remedied; the importance of practical experimentalising; the necessity for a proper nomenclature for soils; the suiting of soils to the different habits of plants; and the usefulness of such knowledge, from the laws of nature remaining immutable. Mr. Fish agreed in the statements made by Mr. Keane, as showing the importance of even a slight acquaintance with chemical science; adverted to the use of calcareous manures, and when their application would be profitable; the means

of detecting the presence of magnesian limestone; and a simple method of ascertaining the value of marls. Mr. Stapleton brought forward a number of substances which remained insoluble after an analysis of the ashes of the vine; he also showed the principle of capillary attraction with two panes of glass, and small glass tubes. Mr. Ayres considered that Mr. Keane had paid too much attention to the opinions of Sir Humphry Davy, as that eminent chemist was in error in several points, more especially in his recommending the use of fresh manure; it being now known that manure possesses the greatest fertilising influence when used in a decomposed state, from the humic acid it contains. Mr. Stapleton informed the Society that Mr. Layton, a chemical gentleman, would be happy to give several lectures to the Society; and the Society, having passed a vote of thanks to Mr. Layton, commissioned Mr. Stapleton to state that the Society would be obliged by his services.

Art. V. *Retrospective Criticism.*

Erratum. — In Vol. XII. p. 554. line 15., for "30 ft. high," read "13 ft. high."

Increase of the Stump of the Silver Fir, without the Aid of Leaves. (p. 142.) — I feel not a little gratified, and certainly much obliged to you, for inserting M. Dutrochet's account of the growth of the roots of the silver fir so long after the tree had been felled. It is some confirmation, I think, of my own ideas regarding the local developement of the vital membrane, and non-descent of the sap, published some years ago. M. Dutrochet's endeavours to ascertain the fact, in the first place, and his candour in afterwards publishing it, show him to be a lover of truth; because this fact not only contradicts some of his own previously declared opinions, but those of many of his most intimate friends and coadjutors in the investigation of vegetable economy and botanical research.

We have cause to regret that that eminent physiologist has not appended his own explanation of this curious phenomenon to the naked fact; as it is probable he would have entered into a justification of the opinion of Du Hamel, Knight, De Candolle, Lindley, &c., who have all affirmed, as an indisputable doctrine, that the accretion of the stems and roots of trees is accomplished by the subsidence and organisable properties of the elaborated sap. This he (M. Dutrochet) would very naturally have done, not only in his own behalf and that of his friends, but for the sake of the science itself. It would be curious, too, to see how he would apply his own favourite doctrine of the exosmose and endosmose currents of the sap in vascular tissue, where no circulation of the fluids could take place, and where there were inlets, but no outlets, save a small degree of expansion.

The only comment on the circumstance is the following sentence: — "It appears from this, that the growth of trees in diameter is the result of a *local developement;* and that the organic matter of this increase does *not descend* from the upper parts of the trunk, as some physiologists still think." Whether this sentence was written by the reporter to *L'Hermès*, or by M. Dutrochet himself, does not appear; but, if by the latter gentleman, it will astonish many of his own admirers, as well as all those who consider the descent of the sap as an irrefragable truth. — *J. Main. March* 14. 1837.

Introducing the better Sorts of Vegetables to Cottagers. (Vol. XI. p. 63.) — I believe we need not trouble ourselves much about introducing the better sorts of vegetables to cottagers. I find many who cannot endure that general favourite, celery; and I have amused myself to-day on the subject with a man at work here. I sent him some salad, nicely dressed for my own dinner, to try and make him like celery and beet-root. Even the dressing did not make it palatable to him, nor conquer his objections to the celery and beet-root; and we had a hearty laugh together, when he closed the description of his dislike

to them, by observing that " half the vegetables great folks eat, the poor man would not pick up in the road." In fact, half our tastes are acquired. — *Selim. Feb.* 5. 1837.

Destroying the Thrips, &c. — It appears, by the statement of Mr. C. Puller (Vol. XII. p. 352.), that my receipt for destroying the thrips is not applicable where there is fire-heat; though I beg to assure him that my cucumber plants in the frame did very well after its application: but I sprinkled them with clean water next morning, and kept them shaded all day. The following recipe, recommended by the worthy president of the Horticultural Society, J. A. Knight, Esq., for the destruction of both thrips and red spider, and which he has practised for some time, will, I think, be more applicable for Mr. C. Puller's stove cucumbers; and, as I have not seen it stated in your pages, I take the liberty of sending it to Mr. C. Puller, by way of compensation for his loss. Mr. Knight knocked the small tube off the end of his old apparatus used for smoking the stoves, &c., and had small holes made in the end, which rendered it something like Curtis's lime-duster, figured in Vol. I. p. 415. A small quantity of the flour of sulphur was put into this, now to be called the sulphur tube, along with a few pieces of feathers (cut off the ends of the strongest quills). This being done, the sulphur tube was put on a pair of bellows, and held under the leaves of vines, peaches, melons, cucumbers, &c.; and, by the operator giving very gentle puffs, the rigidity of the feathers kept tossing the sulphur about in such a manner as only to allow it to come out in very small quantities, which deposits itself under and over every leaf in the house or frame, and bids defiance to every species of insect: the house or frame to be kept rather warmer than usual, and the plants not to be sprinkled afterwards. The above may be of great service to us in frame culture; but I think there is nothing that will beat the old plan in vineries where there are whitewashed flues; which is that of adding a handful of the flour of sulphur to the whitewash, and brushing it on the flues before the leaves come out. — *Agronome's Nephew. Feb.* 15. 1837.

Sir Henry Steuart's Mode of transplanting Trees, and relative Subjects. — Between twenty and thirty years ago, I was engaged at school in learning that part of arithmetic called Profit and Loss; and for several years I have been engaged in planting for Profit and Loss; for the young trees which I have planted I term Profit, and the large ones Loss. This aping of Sir Henry Steuart's plan I detest; but, though I said all I could to point out its defects to my employer, it was of no avail, he having read that part of the *Planter's Guide* which states that, " where gentlemen are led by their gardeners, it is the blind leading the blind." Strange as it may appear to Sir Henry Steuart, it is a fact, that those who have been led by him have had reason to repent; and are not so blind, but they can now see very clearly that their newly planted large trees look like stricken deer, and their large transplanting machines like lumber. I did not lay down the pruning-knife, and take up the pen, merely to write the above truth, but another, of a different nature. Having seen Mr. R. Glendinning's list of trees in Vol. XII. p. 515., which he recommends for planting an approach, it struck me how easy it was to write out a list of names of trees, and recommend it in print, but how difficult it is to get gentlemen to take any notice of it, particularly any of those gentlemen who have read the *Planter's Guide*. During the last three years, I have planted, and am now completing, an approach about a mile long; the ground very much undulated, and a variety of soil. I recommended a long list of hardy trees, such as *A*'cer monspessulànum, *Negúndo f*raxinifòlium, different species of *Æ*'sculus, the ash, different species of American oaks, &c. To form back and side scenes near the mansion, or, rather, to improve them, there being no evergreen trees in the immediate neighbourhood, but plenty of oak and beech, I recommended *C*èdrus Libàni, *P*ìnus *Cémbra*, *A*'bies Douglàs*ii*, &c., of that delightful family, grouped in such a manner as I thought would connect the new planting with the old, as well as to soften the winter's cold. All I could say was of no avail whatever, my employer having read the *Planter's Guide*;

and last, though not least, I planted about a hundred bushes, as they were called, which were ordered to be all of the common hawthorn. Here I tried again to introduce a long list of new, beautiful, and curious thorns, such as *Cratæ'gus tanacetifòlia*, *C.* coccínea, *C.* c. corállina, *C.* macracántha, &c.; but all my fine names were of no use whatever, my employer having read Sir. Henry Steuart's *Planter's Guide*, and being determined not to be led by " the blind." I therefore determined never more to mention anything new; feeling confident that it is extreme folly to attempt to lead those who will not see. Sir Henry Steuart very truly remarks that " the lords of the soil in this kingdom have, from time immemorial, been good sportsmen, and, of late, they have become knowing agriculturists and cattle-breeders; and, as the tide of fashion has, not long since, set in from the south in favour of the occupation last mentioned, and flowed even to fulness, so we may hope that the knowledge of wood will, ere long, have its turn." Who, I ask, but gardeners (notwithstanding their being such blind guides), are to set in the wood fashion from the south ? It always appeared strange to me, that a man of such abilities as Sir Henry Steuart should speak in the manner he does of gardeners. He is certainly taking the leading-strings out of the gardeners' hands, when he tries to make gentlemen believe that an old tree will grow just as well after removal as a young one; for this is certainly the blind leading the blind. To put Sir Henry Steuart's assertion about gardeners to the test, let us suppose that a gentleman, wishing to make some alteration in his grounds, had engaged a first-rate gardener to lead him. The knowledge of this blind man would have directed him to trench, mix, and pulverise the earth to the depth of 2 ft.; to convert his abundant stock of peat earth into pabulum, or convertible matter, after Lord Meadowbank's plan; to apply it to the surface of the trenched ground; and to thoroughly mix the whole into one uniform mass. This part of the work having been well executed, the blind gardener would advise his employer to get young trees from a nursery, that had been transplanted for three years, at 3 ft. apart every way, and to pay the nurseryman three times as much money for them as is generally charged for those plants grown in the usual way at 1 ft. apart. Had Sir Henry Steuart spent his money, directed by the blind man's knowledge, in the above manner, he would have had more real beauty, and more real property, in his woods, than there can be in them at present; for, had young trees been planted in 1816, on Sir Henry Steuart's estate, with the same allowance of manure which he had given to old ones, they would by this time have measured, if Quércus pedunculàta, from 20 ft. to 30 ft. high; if *Q.* sessiliflòra, from 30 ft. to 40 ft. high; and if the Chichester or Huntingdon elm, in a favourable soil, from 40 ft. to 50 ft high. Indeed, I shall be within the bounds of truth, when I assert that, had even the common English elm been planted, at the above-mentioned time, about 5 ft. above the level, and 20 ft. from the lake, it would have measured 60 ft. high. — *Agronome's Nephew. Nov.* 1. 1836.

Forming Plantations with a View to facilitating their Aftermanagement. — I quite concur with Mr. Archibald Gorrie, in his observations (see Vol. XII. p. 237.) on my plan of " forming plantations with a view to facilitating their aftermanagement," that no regular plan of thinning them is to be put in competition with a thinning under the superintendence of a skilful forester. But he must bear in mind, that three fourths of the plantations in England are ruined for want of early thinning of any kind; that very few persons can have the aid of skilful foresters; and that a very large proportion of planters, either for want of time or inclination, or from being too idle, cannot, or do not, in fact, superintend such operations. It was for the use of that large class of persons that my plan was promulgated. Further experience induces me most strongly to recommend that plan of planting, with a view to subsequent management, to those who are not likely to be able to command a forester's aid, or their own time. I have, this season, experienced the advantages of it in a plantation of 16 acres, formed upon the plan recommended in Vol. X. p. 26. This plantation, now of nine years' growth, required thinning this winter. It

would have occupied any one many days to mark the trees to be cut out, and I could not possibly devote an hour to it. I gave a common woodman a plan on paper of a small portion, and crossed in pencil the trees to be cut out, and directed him to proceed over the whole plantation in like manner; and the work has been satisfactorily performed. In a few instances, no doubt, it has happened that a better tree has been cut, and a worse left; but this damage would amount to very little, and is not to be named in comparison with that which would have resulted from delaying the thinning for a single year. — *Charles Lawrence. Cirencester, January*, 1837.

Quércus pedunculàta and Q. *sessiliflòra, with their Varieties.* — I herewith send you two small branches of oak, which I consider to be worthy of your notice. I cut them off two large trees that grow amongst many more of the same family, but which were, on Nov. 5. 1836, as green as the common holly; and now they have got that golden tint which their neighbours had on Oct. 5.: thus gaining a month or five weeks on dreary winter. I call them *Q.* sessiliflòra, though their very long footstalks are as remarkable as their late greenness; but to give names to all the variations of oaks in this country would be a hard task. I could send you a bushel of oak leaves out of Bewdley Forest (or Wyre Forest), that would vary in breadth from a man's finger to a man's hand, and, in manner of growth, from leaves quite sessile to leaves with footstalks 2 in. long. The forest contains about 12,000 acres; and I have been over the greatest part of it; and I find both *Q.* pedunculàta and *Q.* sessiliflòra in abundance, besides hundreds of varieties, as I have above stated. From this, I take it that *Q.* sessiliflòra has been as long in England as *Q.* pedunculàta. I asked one of Mr. Childe's woodcutters if he found any difference in the hardness of the wood; and he told me very seriously that there were three different sorts of oaks in the forest; the black, the red, and the white. Of these the black is the hardest, and the white the softest. On hearing the above, I requested him to send me a specimen of each, with a leaf, sometime during the winter, that I might learn which leaf it is that produces the red oak. The oldest and largest oaks about Kinlet are *Q.* sessiliflòra, which grows much faster than *Q.* pedunculàta. There is a beautiful grove of old oaks here, on a hanging bank of about 400 acres which is seen from the drawingroom windows; and every person of taste who sees it considers it grand. The reason why I mention it here is, that it is going to have a partial thinning; and any person, that knows the face of an oak in winter as well as he does in summer, may mark *Q.* sessiliflòra for the axe, and leave *Q.* pedunculàta to stand until England wants new ships; for there is as much difference in their manner of growth as there is between the black Italian and Lombardy poplars. *Q.* sessiliflòra grows very luxuriantly, with the branches upright, or fastigiate; and *Q.* pedunculàta grows slowly, with the branches horizontal; and its gnarled spray may be distinguished from the spray of *Q.* sessiliflòra at a great distance. Though there has been a great deal said against *Q.* sessiliflòra, I do not think that gentlemen would like to have this kind totally eradicated, as they are, wherever I have been, the larger trees. I think that the nurserymen ought to keep them separate; then gentlemen might plant *Q.* sessiliflòra for coppice, and *Q.* pedunculàta for timber. — *John Pearson. Kinlet Gardens, Nov.* 26. 1836.

The Black Irish Elm. (*Arb. Brit.*, p. 1398.) — In compliance with your enquiries respecting the black Irish elm, I beg to say that it was sent by me to the Horticultural Society's Garden at Chiswick, being a variety which, though I will not affirm that it is peculiar to Ireland, yet is one that I have not met with elsewhere, or any description that suits it. It was found by my father, in this neighbourhood, about 1770, and has since been cultivated in our nurseries. It takes its name from the dark chestnut-colour of its young shoots, is hardy, grows quickly when young, and makes a slender, erect, handsome tree when old. I sent it also to the Botanic Garden at Glasnevin, and, I believe, to the Horticultural Garden, Edinburgh; and their books should point it out. — *J. Robertson. Kilkenny, Feb.* 18. 1837.

Cytisus scopàrius Link, *Spártium scopàrium* L.—To the various uses assigned to the *Cytisus scopàrius*, or common broom, in the *Arboretum Britannicum*, add the following: — A strong decoction of the recent shoots is used by shepherds, in the north of Scotland, for salving sheep; and is believed to be as effectual as tobacco liquor, for which it is substituted. Some add a little spirits of turpentine to this decoction before using it. — *D. Beaton. Haffield, near Ledbury, March* 7. 1837.

Art. VI. *Queries and Answers.*

The Dry Scale on Apple and Pear Trees. — The pear and apple wall-trees in this garden, and one or two of the gardens in the neighbourhood, are infested to a most fearful extent with a small insect, known here by the name of the Dry Scale. It resides upon the bark, and sometimes, I believe, even upon the fruit itself. It has a most destructive effect upon the branches and tree where it takes up its abode; the branch decaying, and, in a short time, becoming utterly useless. I never observed these creatures moving, or their organs of locomotion; but I should think they are possessed of such organs, wings, for instance; for, if a young tree is planted near a tree infested by them, emigration soon takes place, and, in a short time, the young tree is swarming with them. Here they seem most partial to the Ribston pippin apple, and black Achan pear; never touching plums, peaches, or cherries.

Along with this I have sent two branches; the one of a pear tree, the other of an apple tree, to show you these creatures themselves, and the destructive effects they produce. Once or twice every year, I rub or brush the branches infested with a composition of soft soap, turpentine, and train oil. This checks their ravages, but only partially; and, besides, it has not a very good effect upon the trees.

My object in writing to you is, to ask if you, or any of your friends, would be so good, through the medium of your excellent Magazine, or otherwise, as to give the name of this insect or plant, the best means of getting rid of it, and the season in which this could be done most effectually; together with any other useful information regarding it; such as its nature, manner of reproduction and locomotion, &c. — *W. B., Gardener. Springfield, Arbroath, March* 21. 1837.

This dry scale appears to be the Cóccus conchifórmis *Gmelin*. I have no doubt that it is identical with the Cóccus found upon apples, and figured in the *Field Naturalist*, p. 86.; although in W. B.'s branches they were crowded closely together, indeed upon one another. It is in the very young state that they creep about, finding their way instinctively to the younger shoots. See *Trans. Ent. Soc.*, vol. i. p. 3., for a remedy by Mr. Ingpen. — *J. O. W. April*, 1837.

We have written to W. B. to furnish us with an infested branch once a month, or oftener, if he observes any change taking place in it, in order that Mr. Westwood may study the history of the insect throughout the year. In the meantime, we give the following quotation from the paper of Mr. Ingpen, from the *Transactions of the Entomological Society*: —

"The injuries which the Cócci do to vegetation are very great, not only in green and hot-houses, but also, which is of more importance, to the out-door fruits. The apple, pear, plum, peach, apricot, &c., suffer alike from their destructive attacks. The effects of their ravages on fruit trees appear to be, that, by absorbing the sap, the growth of the trees is retarded, the fruit loses both size and flavour, and the crop decreases.

"In consequence of the female Cóccus adhering close to the bark, it is extremely difficult to eradicate; and I am not aware of any method of getting rid of it in this state, short of scraping it off the branches. This mode, however, would be extremely tedious, and, at the same time, endanger the life of the tree. There are various remedies in use; such as washing the trees with tobacco-water, soft soap and water, and lime-water; all destructive of insect

life: but, in a matter of this nature, economy is of importance. Vegetable solutions are not injurious to vegetable life; but mineral washes are, no doubt, dangerous. Lime-water, however, is an exception, and combines three important qualities: it is perfectly harmless to vegetation, it is cheap, and, at the same time, destructive to insects. I should recommend two or three applications, in the spring, at intervals of one or two weeks, of strong lime-water with a brush, and a dusting of quicklime before the branches get dry; or a washing of soft soap and water, using also the powdered lime. For plants in the green and hot house, a solution of bitter aloes is said not only to destroy the insect, but to prevent its future appearance on the plant washed with it.

"I think the causes of failure in getting rid of this pest have arisen from the application of remedies at improper seasons; that is, when the female has become fixed to the plants. I would suggest that the remedies be applied when the young larvæ make their appearance. In this state they are locomotive, and may be easily detected with a pocket magnifier. If, therefore, at this period, any of the above remedies were applied two or three times in the manner before suggested, I have little doubt of a successful result." (*Entom. Trans.*, part iii. p. 175.)

Art. VII. *Covent Garden Market.*

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage, per dozen:		
White	0 1 0	0 1 6
Red	0 6 0	0 8 0
Cabbage Plants, or Coleworts, per dozen	0 8 0	0 10 0
Broccoli, per bunch		
White	0 1 6	0 4 0
Purple	0 0 6	0 2 0
Legumes.		
Peas, imported from Lisbon, per half sieve	1 5 0	1 10 0
Kidneybeans (forced), per hun.	0 1 6	0 2 6
Tubers and Roots.		
Potatoes — per ton	4 10 0	6 0 0
Potatoes — per cwt.	0 4 6	0 6 0
Potatoes — per bushel	0 2 6	0 3 0
Kidney, per bushel	0 3 0	0 0 0
Scotch, per bushel	0 2 9	0 3 0
New, per pound	0 2 6	0 3 6
Jerusalem Artichokes, p. ½ sieve	0 1 6	0 0 0
Turnips, White, per bunch	0 0 5	0 0 6
Carrots, per bunch:		
Old	0 0 6	0 0 8
Young	0 1 0	0 0 0
Horn	0 1 0	0 1 3
Parsneps, per dozen	0 0 9	0 1 0
Red Beet, per dozen	0 1 0	0 1 6
Skirret, per bunch	0 1 6	0 0 0
Scorzonera, per bundle	0 1 3	0 0 0
Salsify, per bunch	0 1 3	0 0 0
Horseradish, per bundle	0 1 6	0 4 6
Radishes, Red, per dozen hands (24 to 30 each)	0 1 6	0 2 0
The Spinach Tribe.		
Spinach — per sieve	0 2 0	0 3 0
Spinach — per half sieve	0 1 6	0 2 0
The Onion Tribe.		
Onions, old, per bushel	0 7 0	0 8 0
for pickling, per ½ sieve	0 3 6	0 5 0
Green (Ciboules), per bunch	0 0 4	0 0 6
Leeks, per dozen bunches	0 1 0	0 1 3
Chives, per dozen roots	0 4 0	0 0 0
Garlic, per pound	0 0 8	0 0 0
Shallots, per pound	0 1 3	0 1 6
Asparaginous Plants, Salads, &c.		
Asparagus, per hundred:		
Good	0 10 0	0 12 0
Fine large	0 15 0	1 5 0
Middling	0 5 0	0 7 0
Small	0 3 0	0 4 0

	From £ s. d.	To £ s. d.
Sea-kale, per punnet	0 2 6	0 5 0
Lettuce, Cabbage, per score	0 0 6	0 1 0
Endive, per score	0 1 9	0 2 6
Celery, per bundle (12 to 15)	0 0 6	0 1 6
Small Salads, per punnet	0 0 2	0 0 3
Watercress, per dozen small bunches	0 0 6	0 0 7
Pot and Sweet Herbs.		
Parsley, per half sieve	0 2 0	0 2 6
Tarragon, dried, per doz. bun.	0 3 0	0 0 0
Fennel, per dozen bunches	0 3 0	0 4 0
Thyme, per dozen bunches	0 4 0	0 0 0
Sage, per dozen bunches	0 2 0	0 3 0
Mint, per doz. bunches	0 6 0	0 8 0
Peppermint, dried, p. doz. bun.	0 1 0	0 0 0
Marjoram, per doz. bun.	0 1 0	0 0 0
Savory, green, per doz. bun.	0 2 0	0 0 0
Basil, dried, per doz. bunches	0 2 0	0 0 0
Rosemary, green, per doz. bun.	0 4 0	0 0 0
Lavender, dried, per doz. bun.	0 4 0	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Rhubarb Stalks, per bundle	0 0 9	0 1 3
Edible Fungi and Fuci.		
Mushrooms, per pottle	0 3 6	0 6 0
Morels, per pound	1 0 0	1 4 0
Truffles, Foreign, per pound	0 16 0	1 0 0
Fruits.		
Apples, Dessert, per bushel:		
Nonpareils	1 10 0	2 0 0
Reinettes grises	1 0 0	1 10 0
Baking	0 6 0	0 10 0
Pears, Dessert, per dozen:		
Bon Chrêtien	0 6 0	0 0 0
Strawberries, forced, per oz.	0 0 9	0 1 6
Filberts, English, per 100 lbs.	5 0 0	0 0 0
Pine-apples, per pound	0 6 0	0 12 0
Grapes, per pound:		
Hot-house	0 12 0	1 0 0
Portugal	0 1 0	0 3 0
Spanish	0 0 6	0 0 9
Cucumbers, frame, per brace	0 4 0	0 6 0
Oranges — per dozen	0 0 9	0 2 6
Oranges — per hundred	0 3 6	0 16 0
Bitter, per hundred	0 9 0	1 4 0
Lemons — per dozen	0 0 9	0 2 0
Lemons — per hundred	0 5 0	0 14 0
Nuts:		
Brazil, per bushel	0 16 0	0 0 0
Spanish, per peck	0 4 6	0 0 0
Barcelona, per peck	0 5 0	0 0 0

Observations. — From the continued prevalence of severe frosts, and dry searching wind, during the last four weeks, the supplies to the markets have been materially diminished; which has had considerable effect in raising the prices of all articles furnished to the markets which may be considered as the immediate produce of the season; such as broccolis, coleworts, spinach, &c. The prices of all forced vegetables have also been considerably enhanced by the demand created from the deficiency of supply in other articles, and the lateness of the season; so that the market has presented the unusual appearance of a continued diminution, at a time when a steady increase in its supplies is usually expected. A reference to the present list, as compared with the preceding, will show the effect produced in the prices of most articles. Potatoes alone have decreased in value, in consequence of a very large and unexpected supply having come to hand, to the extent of eight thousand tons in four days, from Scotland, Yorkshire, Devonshire, and Jersey; but not any from Ireland. Onions have been supplied from Bedfordshire rather freely; but, in consequence of the crops in the immediate neighbourhood of London having been badly harvested (they did not keep well, and are almost exhausted), they have realised much higher prices. Carrots, also, have been in demand, and have considerably increased in value. The crop of apples having been but moderate, the supply, throughout the winter, has been limited. But few foreign have been imported: at present they are in demand, and realise good prices. We have had a few peas, from time to time, imported from Lisbon; but they do not come to hand fresh, and have not been immediately saleable. It will be yet some weeks before we can expect any of our own, unless we should be favoured by a great change in the weather. — *C. G. M. April* 22. 1837.

Art. VIII. *The London Horticultural Society and Garden.*

March 21. 1837. — *Exhibited.* Camél*lia* fimbriàta, from Mr. R. Donald. Camél*lia* trícolor, from Mr. Hugh Low. Dendròbium aggregàtum, Ardísia paniculàta, Oncídium bifòlium, and O. ampliàtum, from Mrs. Lawrence. Miscellaneous flowers, from the Hon. W. H. F. Strangways. Illícium floridànum, Styphèlia tubiflòra, Cymbídium *a*loïfòlium, Andróme*da* floribúnda, Seedling *R*hododéndron pónticum, two seedling Camellias, and five other sorts in pots, and Phàrus grandifòlius, from Mr. Glenny. Ixò*ra* coccínea, Oncídium carthaginénse, *E*uphórb*ia* jacquini*æflòra* (fúlgens), and Catasètum semiapértum, from Mr. Priestly, gardener to Walter Boyd, Esq.

*From the Garden of the Society. Plants. Bérberis A*quifòlium, *S*isyrínchium grandiflòrum, Blèt*ia* Shephérd*i*, Nemóphila insígnis, *C*lématis austràlis. — *Fruit.* Pears: Beurré rance, Easter bergamot, Chaptal, a good stewing pear. Apples: Framboise, and Baldwin kitchen apples; Chester pearmain and Grange's pearmain, kitchen and table apples, American pippin, red everlasting, which has a bloom like that on some of the Russian apples and crabs; and Malo di Carlo, the celebrated apple of Finale (see *Transactions of the Horticultural Society*); though here it is found to be a most inferior apple, pale, and of bad quality. — *Cuttings for distribution.* Pears: Monsieur le curé, and forme de Deliers. Apples: White Nonpareil, and Sudbury beauty.

Awarded. A silver Knightian medal to Mrs. Lawrence, for Dendròbium aggregàtum, and to Mr. Priestley, gardener to Walter Boyd, Esq., for *E*uphórb*ia* Jacquini*æflòra* (fúlgens).

THE

GARDENER'S MAGAZINE,

JUNE, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 4. THE ONION FLY.

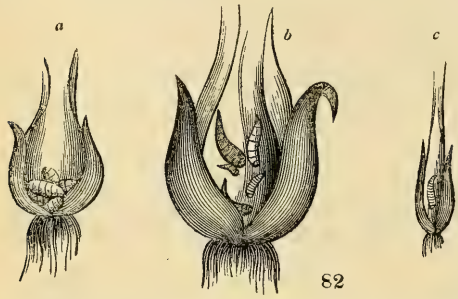
Order, Díptera *Linnæus.* (Two-winged flies.)
Division, Brachócera *Macquart.* (Having the antennæ short, and furnished with a bristle above.)
Family, *M*úscidæ *Leach.* (So named from the Linnæan genus *M*úsca.)
Subfamily, Anthomỳzides *Macquart.*
Genus, Anthomỳia *Meigen.* (So named from two Greek words: *anthos*, a flower, and *muia*, a fly; expressive of the attachment of the insects, of which it is composed, to plants.)
Subgenus, E`gle Rob. Desv. Myod., p. 584.
Species, Anthomỳia cepàrum.* (Scatóphaga cepàrum *Kirby and Spence Intr.*, vol. i. p. 192. note; Anthomỳia cepàrum *Bouché Naturg.*, p. 73., *Gart. Ins.*, p. 129.) (*Cepa*, the Latin specific name of the onion; *ceparum*, gen. plur., of the onions.)

DURING the summer months, and especially in June and July, the cultivator of onions is annoyed by perceiving that, here and there, in various parts of his beds of this vegetable, the plants appear to be in a dying state, and the leaves fallen on the ground. At first, this is observed in plants which are only just above the surface of the soil, and which are not above the thickness of a straw. These soon die, and then others, of a larger size, are observed to decay in a similar manner; this continues until the middle of July, and even until the onions are

* Stephens gives this as synonymous with *M*úsca radìcum of Linnæus and Meigen, *M*úsca décoré of Harris, and Anthomỳia brássicæ of Wiedemann. Macquart gives *M*úsca radìcum of Linnæus as the E`gle vulgàris of Robineau Desvoidy. The description of *M*úsca radìcum of Linnæus will not agree with the onion fly, having four black bands, and feeding upon the roots of *R*áphanus. I should also suppose that it is distinct from Anthomỳia brássicæ. Bouché has, in fact, described a distinct species of Anthomỳia under that name. (*Gart. Ins.*, p. 131.) He has also described A. cepàrum and A. radìcum as distinct. (*Naturg. des Ins.*, p. 73. 75.)

full grown; at which time they have occasionally sufficient strength to survive the injury, with the decay of a portion only of their outer layer or root; the centre part remaining sound. In this manner whole beds are destroyed; and it seems to be of little use to sow again, as the fresh-sown plants fare no better. In light soils especially, the attacks of this insect are occasionally very annoying to the gardener.

On stripping off the coats of the young onions which show evident signs of decay, it is at once perceived that it is owing to the attack of a small grub, destitute of legs, upon the vital parts of the bulb or stem of the plant, that its destruction is occasioned.



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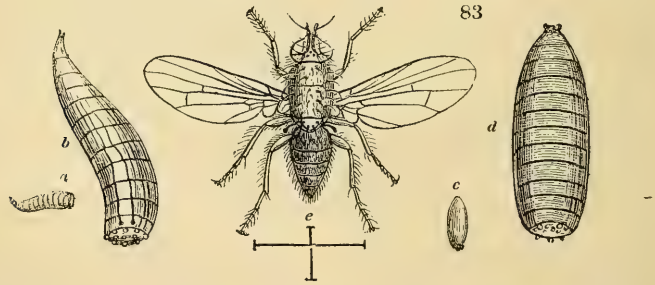
On pulling up a very young onion (*fig.*82. *c*), its interior is found to be completely devoured by a single grub at its very heart; but, in plants of larger growth, I have counted at least half a dozen of these grubs, varying considerably in size (*fig.* 82. *b*). In the summer season, these grubs are about a fortnight in arriving at their full growth. They generally consume the entire of the interior of the onion; the outside skin of which is alone left dry and entire, serving as a place in which they undergo their transformations, without forming any cocoon. (*fig.* 82. *a.*) In about another fortnight, the perfect fly makes its appearance, the time varying, according to the season, from ten to twenty days.



83

The grub, or larva (*fig.* 83.: *a*, natural size; *b*, magnified), is moderately long and cylindrical, but more conical towards the head, which is of a variable form, furnished with two minute tentacula. The body is fleshy, naked, shining, and of a white colour, with twelve distinct segments. The breathing pores of the first segment of the body are yellow, and the terminal segment is broad

and obliquely truncate, with about eight obtuse points, of a consistence similar to the rest of the body. Near the extremity of the body are observed two small reddish spots, from which proceed two internal and dark-coloured veins. Bouché gives the length of the insect as a quarter of an inch; but those which I have reared were nearly half an inch long when full grown.

When this period is arrived, the larva, by degrees, contracts itself in length, without throwing off the outer skin, and very shortly appears as an oval mass (*fig.* 83.: *c*, natural size, *d*, magnified), of a chestnut colour; having its posterior end blackish, with the extremity red, and with two large black spots corresponding with the spots described near the end of the body of the larva. In this state, it is brittle and shining, without very distinct traces of segments; but the head is furnished with two obtuse points; and the points observed at the other end, in the larva, are also still to be perceived, two of them being rather larger than the rest. Within this puparium the real pupa is to be found, having the limbs laid along the breast.

The perfect insect (*fig.* 83. *e*, magnified, the cross lines indicating the natural size) is of a pale ashy colour; the female (which is here figured) having the abdomen entirely of the same colour as the rest of the body; but in the male it has an interrupted black line down the middle. The different parts of the body are clothed with long black bristles, arising from black points, which, in the thorax, are nearly regularly disposed in 4 lines, and are longer than in the other parts. The mouth, palpi, and antennæ are black; the face shining, and somewhat silvery. There is a broad chestnut line between the eyes, forked behind, leaving the space for the ocelli of the ordinary colour. The nasus is triangularly produced above the mouth; and the antennal bristle is clothed with very short hairs at the base. Behind the eyes is a transverse row of black hairs. The wings are nearly destitute of colour, but rather buff at the base; the iridescence pink and green; and the nervures buff, but darker at the tips of the wings. The legs are black; and the poisers and winglets of a pale yellow. Expansion of the wings, $5\frac{1}{2}$ lines to $6\frac{1}{2}$ lines (about half an inch).

According to M. Bouché (to whose capabilities and abilities for observation I am able to bear witness, from having visited his large nursery, and inspected his collections, at Berlin), the female deposits her eggs upon the leaves of the onion, close to the earth; and she is enabled, doubtless, to introduce them between the outer coats of the bulb by means of her elongated telescope-like ovipositor; so that the larvæ, when hatched, readily make their way to the centre of the root, which they soon reduce to a state of decomposition, which seems to be most congenial to their taste. The same author also states that the insect may be found in the

larva state from May to October, there being, during the period between these months, two or three generations. Hence, it is from this continued generation, and from the period assigned to one brood not agreeing with that of another, that we find grubs of different sizes in the same root. The late broods pass the winter in the pupa state, and are ready to burst forth at the first warmth of the ensuing spring. In Mr. Major's *Treatise on obnoxious Insects*, &c., it is stated, that "the maggot of the house-fly, as described on the cauliflowers, in some situations proves an enemy to the onion. It is most probable that the parent is attracted by some disease in the onion, as we often find that, in those onions which are gouted and moulded (terms known amongst gardeners), the bulb is most liable to its ravages."

Now, it is quite evident, that, in this passage, Mr. Major has confounded at least three distinct species of insects: Anthomỳia cepàrum, Anthomỳia brássicæ, and the house-fly (*M*úsca doméstica), if not more, as there are many species of house-flies. That these insects are very much alike is true enough: but that only makes it the more necessary to exercise a scrupulous investigation of their characters; and this cannot be done without study. It would, indeed, be easy to point out the utter inutility, in many cases, of *practical*, without *scientific*, knowledge; and, consequently, that, in order to destroy insects effectually, entomology must be extensively studied as a science. I trust, indeed, that the time is not far distant, when this science, as well as botany, shall be made a general branch of education. We have, indeed, to regret that in these matters we are always under the necessity of taking lessons from our neighbours across the water, instead of preceding them. At the present time, M. Victor Audouin, one of the professors of the Jardin des Plantes, is giving a most interesting course of public lectures upon the noxious and beneficial insects of France.

Another observation may be made upon the passage cited from Mr. Major's work; namely, that I have always found fine healthy plants most liable to the attacks of the fly. Unlike the turnip saw-fly, which, from the brightness of it colour, is at once detected, the onion fly is of such obscure tints, and there are so many distinct species of flies having totally different habits, and yet so much alike, that even professed entomologists have difficulty in separating them. Hence, the extirpation of the onion fly is attended with greater difficulty. Salt and ashes have been suggested, when strewn over the ground; but these are ineffectual, because it is upon the plants that the females settle in order to deposit their eggs, and not upon the ground. Bouché suggests the plan of strewing powdered charcoal (*gestampften kohlen*) over the bed, in which the female flies will deposit their eggs as willingly as upon the onion; the charcoal

dust being destroyed as soon as the larvæ are hatched. The power of reproduction of these flies is so great, that, if the early attacks of the insect are not checked by the destruction of the young onions when the first attacks of the insect are perceived, it will be next to useless to attempt any other subsequent remedy. Burning the plants infested will be more advisable than burying them; because the latter will not cause the destruction of the insects. It will require but a very slight acquaintance with an onion bed to detect the plants which are infested.

Mr. Mackmurry states that any remedy, sufficiently powerful to destroy the insect (that is, the larva enclosed within the onion), must inevitably destroy the onion itself; and he suggests that a careful selection of such soils and situations for the onion crops should be made, as are most likely to resist the various common incidents of season peculiar to this very variable climate, and containing such eligible food, and in such proportion, as this bulbous esculent requires: and Mackray recommends the sowing of onions in ground that has had strawberries four or five years, and which may be repeated two or three years successively. Macdonald suggests the transplanting of seedling onions, first dipping the roots in a mixture of three parts of earth and one part of soot, with a sufficient quantity of water to make a puddle; and Major advises the frequent watering of the beds with a mixture composed of one gallon of soapsuds to four quarts of gas water; or, in place of the latter, two quarts of gas tar: either will do, as the only use of this mixture is to produce an offensive smell.

These are the suggestions of practical writers. How far they are beneficial, how far accidentally serviceable, or how far counteracting the habits of the insect as above detailed, must be left for future investigation.

ART. II. *Farther Suggestions relative to the Amelioration of our edible Fruits.* By D. BEATON.

To carry out the principles on which my former suggestions (p. 203.) are founded, every possible precaution must be taken to keep the rain, and even all kind of dampness, from the fruit, after it is supposed to have acquired its full size. A spare glass frame, placed against the tree, will be found a good preventive. The fruit may hang on the tree till it falls of its own accord, or till the appearance of frost. The seed derives a considerable degree of nourishment from the fruit, for some time after it is gathered; therefore the fruit ought to be laid in some dry warm

place (say the front of a late vinery), under the influence of the solar rays, for a month or so, or till sowing time.

Besides the chance of originating an improved race of fruit by this treatment, I am firmly of opinion, that, if it is possible to reproduce any given variety of fruit from seed, this system, or some modification of it, will be found the most suitable for that purpose, the necessary precautions being, of course, taken to guard against the introduction of foreign pollen.

As a matter of speculative curiosity bearing on this subject, it may be enquired how, or by what means, were the apple, the pear, or, indeed, any of our edible fruits, first produced from their "savage parents?" Certainly not by cultivation, which at once would refute the above hypothesis. Then it follows, as a matter of course, that it must have been by some accidental or natural cause. The following may be among the many causes which will occur to the inquisitive mind. The savage parents, sown, in the first instance, by the hand of nature, soon sprang up in youthful vigour, in dense masses, each struggling for the greatest share of that light and air which is so essential to their well-being. The strongest soon overtopped their weaker brethren, and found it no difficult task to keep them in subjection afterwards: yet the more resolute of the weaker party still kept pushing up their aspiring heads among the main branches of their oppressors, and with their united growth, aided by the force of the passing breeze, began to make deep indentations on them by rubbing. Hence, perhaps, the origin of ringing the branches of fruit trees. In course of time, these main branches may have become so much dilapidated, that the necessary circulation of their juices was almost entirely impeded: but their leaves, not willing to give up their assigned functions, still kept pumping up the reserve juices within the sphere of their action. The juice being now supplied to the leaves in a less quantity, they elaborated it to a still higher degree than usual. The fruit all this time had little to complain of, seeing that what nourishment it lost in quantity it gained in quality; and the seed, after partaking of the essence of this improved nourishment, brought forth, in its turn, a new race of fruit trees, removed one degree in improvement from their parents; and thus a foundation was laid for future improvements; or, as Ovid most beautifully describes it, —

> "Hanc Deus et melior litem Natura diremit."
>
> "But God or Nature, while they thus contend,
> To their intestine discords put an end."
>
> DRYDEN'S *Trans.*

This improved race, acting after the example of its parents, in the order of time, we may suppose, brought forth a progeny still further improved; and thus effect followed cause in rapid

succession, for nobody knows how long; till at last, after some tremendous chaotic cause, Adam found "every fruit after its kind" ready improved for his use.

To starve a tree by ringing, transplanting, or any other manipulation to the same effect, in order to obtain an improved variety from its seed, might reasonably be called a novel and unnatural method: yet you see, by the above, it is the most ancient and natural after all; and, to make a short story of a long one, grafting pear trees on quince stocks, and training down the boughs (a system so prevalent on the Continent), must have powerfully assisted our neighbours in obtaining those delicious pears for which we are now so much indebted to them.

Haffield, April 7. 1837.

ART. III. *Plan, Section, &c., of a small span-roofed Pit, for Greenhouse Plants, recently erected at Stratford Green, Essex.* By JOHN BEVIS.

FIGS. 84, 85, and 86. are a section, elevation, and plan, of a small span-roofed pit, which Mr. Allcard has lately had erected.

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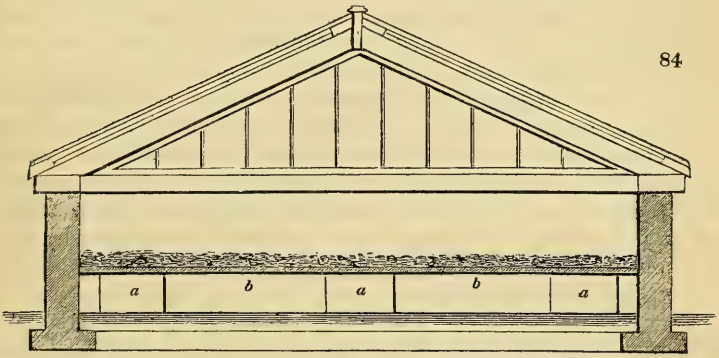

The letters refer to the same parts in the three figures; *a a* are air-flues covered with plain tiles; *b*, tiles covered with sand, to re-

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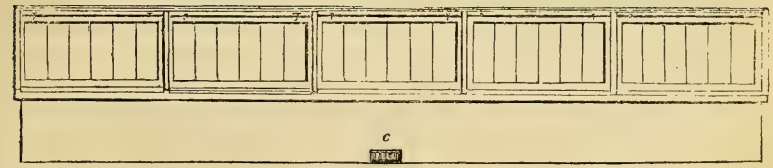

ceive the plants; *c c*, small gratings to admit air, and to exclude vermin; *d d*, brick pillars to receive the tiles.

This pit was erected for heaths, and for rearing and preserv-

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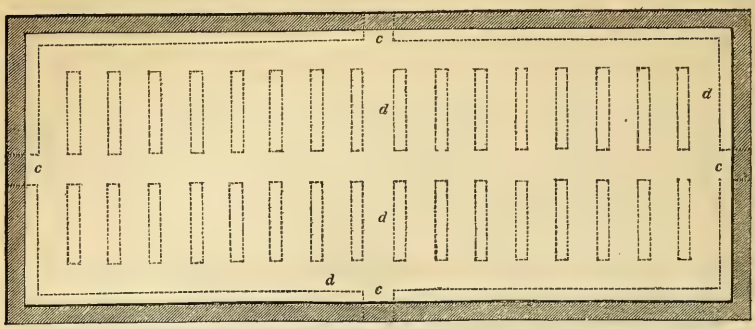

ing the hardier species of green-house plants, intended to be planted out in the open garden in the spring. The principal novelties in it, I apprehend, consist in the method of admitting the air at the bottom, which secures the plants from damping off; the ease with which the lights are removed, being hung on with hooks and eyes; and the method of covering the lights with mats. These are fastened at one end to the ridge of the roof, and at the other to a roller, the whole length of the pit; by which the mats are readily run down over the lights, and kept down, without any fastening, by the weight of the rollers: they are also useful for shading either side, as may be required.

Mr. Allcard wishes it to be known, that he has had this, and other more extensive, useful, and ornamental erections, put up in his garden, entirely by Mr. Thomas Dalby, builder, of this place, whose judgment and good taste in such buildings entitle him to encouragement. Mr. Allcard will have much pleasure in allowing any gentleman to inspect what has been done here, by application to him.

Stratford Green, Essex, Oct. 24. 1835.

We owe an apology to the author of the above paper, and to Mr. Allcard, for not having inserted this article sooner. The real truth is, that, soon after it was received, it was put into the hands of our architectural draughtsman (Mr. Robertson), to reduce the drawings, and transfer them to wood for the engraver. This he does at his own house; and being, soon after he received them, seized with a lingering illness, he was unable to proceed with them till quite lately. The drawings belonging to several other articles have, unfortunately, been in the same predicament; and we, in consequence, owe similar apologies to Mr. Hogg, jun., of New York, to M. Rauch of Vienna, to the author of a transplanting machine in use in Ireland, and to some others, as will appear by the dates of their respective papers, when we publish them. — *Cond.*

ART. IV. *An Account of some remarkable Trees of the Norway Spruce* (A*bies excélsa* Poir.), *now growing at the Whim, in Peeblesshire, the Property of Sir James Montgomery of Bartstanhope and Stobo.* Drawn up, at our request, by J. M'NAB, Superintendent of the Experimental Gardens, Inverleith; and, with our permission, read by him before the Botanical Society at Edinburgh, Jan. 12. 1837.

THE estate of Whim was purchased by the Earl of Islay afterwards Duke of Argyll, in the year 1730; and not long after his death, in 1761, it was purchased by the late Lord Chief Baron, Sir James Montgomery, who formed the garden in 1776. He also improved and enlarged the former plantations of the duke. The Whim is situated on the high grounds bordering the Pentland range of hills, fourteen miles south-west of Edinburgh. The soil is chiefly composed of brown moss or bog earth, which is deep and spongy; the subsoil is various, and is composed, in the kitchen-garden and its vicinity, of a retentive whitish clay. A large proportion of this property is planted with the Norway spruce: a few black spruces, silver firs, and larches, also exist, but only in solitary trees. Of hard-wooded trees, the beech seems to be the most prevalent; and it thrives uncommonly well in the spongy peat soil. It was planted in belts surrounding the estate, by the Duke of Argyll, soon after 1730; the ground having been previously trenched. Nearly all the fine old specimens of trees on this estate were cut down about twenty-five years ago; but there are still some spruce firs, between 65 ft. and 70 ft. high. The girt of the largest common spruce on the estate is 5 ft. 10 in. at the surface of the ground; and that of the largest black spruce is 5 ft. 1 in.

The Whim spruces present some very interesting and remarkable forms, to all appearance caused by the spongy nature of the peat soil in which they grow. Such forms, perhaps, are not common in the country; or, if they do exist, I am not aware of any notice having been taken of them. Of the Whim spruces, the form which appeared to me the most remarkable, was that of a tree which was tillering, or assuming a stoloniferous aspect. This was shown in several specimens, on different parts of the property; and, of those I observed, the most fantastic specimen was one growing on a piece of elevated mossy ground, about an acre in extent, and within the boundary of the kitchen-garden wall. The Lord Chief Baron, in forming the garden, left a bank of peat standing, after the rest had been carted away and burned, as a trophy to show the strongly marked contrast between the improvements of human art, and nature in her wildest form. This spot of ground is called the Wilderness; and on its highest point a singular Norway spruce exists. Owing to its stoloniferous growth, this tree has received the appellation of the Travelling

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Fir; but it might have been more appropriately called the banyan spruce, on account of its branches having taken root wherever they have come in contact with the spongy soil. In this specimen (*fig.* 87., to a scale of 1 in. to 12 ft.), the rooting appearance is seen in a very remarkable degree, in consequence of many natural layers from the trunk, and from the primary substems, having taken root.

This natural layering of the spruce fir has probably been caused by the excessive weight of snow bending the branches towards the ground, and, perhaps, slightly sinking them into it, during some severe season; and the circumstance of the branches being thus held in contact with the spongy peat, for a considerable time, has caused them permanently to assume this position. Being thus inclined downwards, roots seem absolutely drawn from the branches. The tree grows on the surface of the immense bed of peat, as it did when it was first planted, without any increase of soil having taken place; nor is the stem any deeper below the surface of the peat than is usual with trees in other soils.

The depth of the peat soil where the banyan spruce grows is about 14 ft. The Wilderness is placed on a rising ground, which slopes gradually down to a rivulet, where the subsoil appears to be a light-coloured clay. Had it not been that the

under portions of the primary substems proceed from the ground in a uniform sloping direction from the main stem, one would be apt to suppose them seedling trees; as the tops of all of them have assumed that appearance. Perhaps the most remarkable feature in this tree is, that some of the branches which proceed both from the main trunk and also from the lower part of the primary substems, when in contact with the ground, root, and send up their extremity in the form of a young tree. That portion of the branch between the stem and the ground, sometimes several feet in length, does not appear to increase in diameter after the extremity has rooted (as exhibited in *fig.* 88., to a scale of 2 in. to 4 ft.), unless it has rooted close to the main stem. If the horizontal branches do increase in diameter, it is in a proportion not easily ascertained; as some branches which I remarked, proceeding both from the main trunk and from primary substems, varied from 2 ft. to 6 ft. in length, and from half an inch to 2 in. in diameter. Their extremities, when rooted in the ground, assume the appearance of stems, varying from 6 in. to 2 ft. in circumference; the latter being united to the main stem with the greatest diameter of the horizontal branch mentioned (2 in., as shown in *fig.* 88.) The branches proceeding from the primary substems have also branches equally healthy with themselves proceeding from them, and with every appearance of their producing others, which, if allowed room, may in course of time cover the whole Wilderness. That portion

of the main stem which remains above the surface of the soil is little more than 4 ft. high, before upright branches are produced; and it is 7 ft. in its greatest circumference. The stem is divided into several limbs, which run from 30 ft. to 35 ft. in height. The primary substems vary from 8 ft. to 25 ft. in height, and the secondary from 4 ft. to 10 ft. I counted upwards of 30 stems surrounding the mother tree; and 30 ft. was the greatest diameter of the space covered by stoloniferous branches; though in one place a secondary layer had reached as far as 18 ft. from the main trunk. The other specimens, before alluded to, of this form of tree were far inferior in size to the one now described and represented; perhaps owing to the cattle browsing about, and destroying the tops of the young offspring; whereas no cattle could enter the Wilderness to injure the banyan spruce.

Besides the trees mentioned, other anomalies, equally interesting with the preceding, occur in two specimens also of Norway spruce, which had been blown down a great many years ago; but how long I found it impossible to ascertain. The gardener, Mr. Young, has been at the Whim fifteen years; and, during that period, no difference, he says, has been observable on the horizontal portions; but he knows considerable alteration on the upright stems, both as regards their circumference and height. The first which he conducted me to is called the Man-of-War Spruce. (*fig.* 89., to a scale of 1 in. to 12 ft.) It has four stems differing in height and distance from each other, as represented in the figure; the tallest being 34 ft. in height from the ground. At first sight, this tree seems to derive its principal nourishment from the lower portion of the root, at the extremity of the stem: such, however, is not the case; for, on digging beside the horizontal trunk, several strong roots were found to have proceeded from the under portion of the stem, and these roots spread out many feet, at a few inches under the surface. In the other specimen (*fig.* 90., to a scale of 1 in. to 12 ft.), roots were seen protruding above ground, from the side of the horizontal stem; and, when examined by digging, the under surface was also found to have produced roots. In both examples, the original tops had de-

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cayed close to the uppermost arborescent branch; no doubt, in consequence of their not being able to turn upright: notwithstanding, however, the extremities of both have a tendency towards the upright position.

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The spruce fir is capable of being dressed with the shears, in the manner of holly and yew, and made to assume various forms. This was practised, several years ago, on a piece of hedge at the Whim (as represented in *fig.* 91., to a scale of 1 in. to 12 ft.). This hedge is rather a curious object, as far as topiary work is concerned; but, independently altogether of its fanciful shape, it makes a most impenetrable fence, to all appearance resembling yew, but of a paler and more agreeable green. Such spruce fir hedges are, I believe, not uncommon near Berne,

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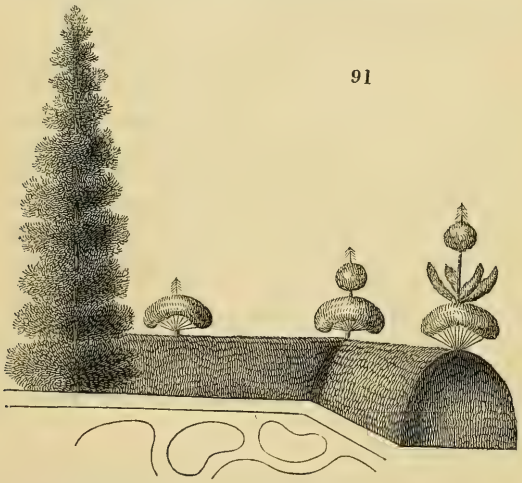

and in some other parts of Switzerland. The spruce fir hedge at the Whim was formed, fourteen years ago, with plants 10 ft. high, put in 3 ft. apart; and, with the exception of three left to shoot up for the purpose of being clipped into ornaments, the whole were cut down to 5 ft., and afterwards dressed to the shape represented in *fig.* 91. The hedge was first cut on Jan. 25., the year after planting; and, as the plants were found to have

sustained no injury, Mr. Young has ever since adopted the same day of the same month, or as nearly so as he could, in every successive year, for the cutting in of the young wood. Every portion of this hedge is beautiful and green; and the annual growths are very short, giving the surface of the hedge a healthy appearance. The soil is a mixture of brown peat and loam.

The circumstance attending the naming of this estate is rather remarkable, and may not be uninteresting when taken in connexion with the whimsical form of some of its productions. The house, as a shooting lodge, was built for the celebrated arboriculturist, John Duke of Argyll; and, owing to the spongy nature of the peat, piles were driven into the ground for the purpose of supporting the foundation. The men employed (unconscious of the duke's being within hearing) were talking about the strange *whim* which the duke had taken into his head, to build a house in such a place. His Grace, on hearing this, immediately cried out, "*The Whim be it;*" and ever since it has retained that name.

Mr. Young informed me that the spruce fir wood, cut from the mossy ground, was comparatively free of dry rot, when compared with wood cut from the drier parts of the Whim estate. This, however, I had no means of ascertaining, except on the authority given.

The planting of trees on such soils as the Whim estate affords should, I think, prove an instructive lesson to landed proprietors who may have similar soils yet unplanted; and much of such land is still to be met with in many parts of Scotland.

The spruce firs described are called, at the Whim, the white American; but I am satisfied, although they assume a somewhat different appearance from that of the common form of the Norway spruce, that they are only a variation (of which we know there are many) of that species, produced by the nature of the soil in which they grow.

It may not be out of place here, to mention that it is said that some of the finest specimens of black and white American spruce firs, about the middle of the last century, were at Whitton, in Middlesex; a place then belonging to the Duke of Argyll. (*Martyn's Mill. Dict.*)

In the peat bogs of the Whim estate, the remains of some old oak trees exist. The one pointed out to me was observed while cutting a drain through a portion of a bog, when the root of an oak tree was seen 18 in. in circumference. This root was traced to the distance of 8 ft., where the original tree had stood. On clearing away the peat soil, the remaining stump of this tree was found to be 9 ft. in diameter. Portions of it were very hard and firm, while others had much decayed.

Experimental Garden, Inverleith, January, 1837.

Similar anomalies in the growth of the spruce fir are not unfrequent in the case of the black spruce, *Abies nigra*. One is described by Mr. Gorrie, in the *Mag. Nat. Hist.*, vol. ii. p. 173., as standing in the woods of Braco Castle, Perthshire; of which *fig.* 92. is a portrait by Mr. Gorrie. This tree, in 1828, was

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about 40 years old; but its height is not mentioned. Mr. Gorrie adds that a natural seedling, which had sprung up not far distant from the mother tree, and was apparently about 12 years of age, was also, in its turn, already surrounded by a numerous and healthy progeny of young trees, proceeding from the extreme points of the branches. At Syon, there is a tree of *Abies nigra* of 50 or 60 years' growth, and probably much more, which is 30 ft. high, and is surrounded by a double circle of trees, which have sprung up from the points of the recumbent branches, all of which have taken root. A portrait of this tree will be found in our *Arboretum Britannicum*. At Stourhead in Wiltshire, and at Ditton Park near Windsor, there are common spruces, the lower branches of which have rooted into the soil, and the extreme points have grown up into regularly branched trees. There is also a very singular tree of this kind at Moor Park, near Rickmansworth, in Hertfordshire, the seat of the Marquess of Westminster; and we think we have seen several others in different parts of the kingdom, though we cannot at this moment recollect where. We know of none, however, at all to be compared, in point of singularity and beauty, with those at the Whim, which we saw in 1805; and the recollection of them induced us to request Mr. Henderson, in 1836, to ascer-

tain if they were still in existence (see his answer, Vol. XII. p. 553.), and afterwards to engage the elegant and accurate pen and pencil of Mr. M'Nab, jun., to prepare for us the preceding paper.

We should be much obliged to any of our readers, who may know of similar anomalies in the spruce fir, if they will send us an account of them; and, if any one can throw any light on the curious facts lately discovered respecting the vitality of the stumps or stools of the silver fir (as noticed p. 142. and p. 234.), we shall be greatly obliged by their doing so without delay. We are informed that, in many cases, particularly the fir woods in the north of Scotland, the stumps of the common Scotch pine retain their vitality for several years. On this very interesting topic we should feel extremely obliged for a statement of facts. — *Cond.*

ART. V. *On the Growth of Trees in exposed Situations.* By T. DAVIS.

I HAVE heard persons in the west of England express surprise that they occasionally see large old trees on the summits of hills, and in other exposed situations, with fine spreading heads, resisting every wind that blows; whilst, in their immediate vicinity, young trees of the same kind bow their heads so regularly away from the prevailing wind, that they denote only too plainly the point of the compass on which lies the great Atlantic.

I believe many gentlemen have been deterred from planting points of land, where trees and woods would be highly ornamental to their residences, by the persuasion of their senses, that neither clumps nor trees could flourish in the degree or the manner in which these ancient landmarks appear to have done. It is for the encouragement of such timid planters that I offer the following observations; and, in explanation thereof, I shall add a few slight sketches.

My attention was directed to this subject, about twenty-five years ago, by an avenue of beech trees planted on a sandy eminence. We had grown up as striplings together; and, as they were within a mile of my then residence, I saw them often.

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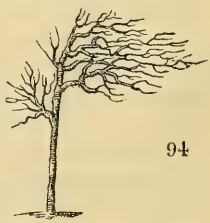
Up to that time, their growth had been somewhat like *fig.* 93.; their heads, by a simultaneous bearing, all leaning from the south-west wind. At the time above alluded to, I noticed several of these trees pushing out a bough in the very teeth of the wind (*fig.* 94.).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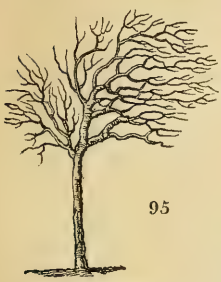
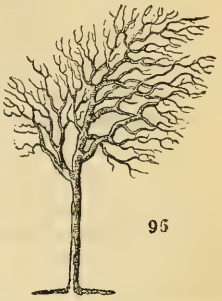
As the north-east side of the tree became thickened in the head, so as to resist the current of the wind, I observed my new friends gained strength, and apparent courage to make further exertions. *Fig.* 95. represents their state in about five years.



95

After this, the difficulty to contend with seemed almost to vanish; for, as the new-formed limbs advanced to bear the stroke of the winter's blast (*fig.* 96.), I saw that the summer's heat had due influence on their growth and formation; and the newly formed head rapidly assumed a state of competition with the older branches on the north-east side (*fig.* 97.). They are now become so nearly round-headed, that, in the summer time, the difference in their growth varies but little from those in sheltered situations. *Fig.* 98. shows their present state; and I hope to live to see their full heads handsomely completed.



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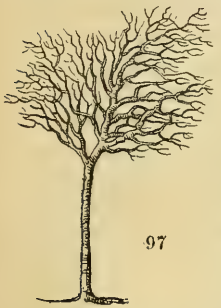

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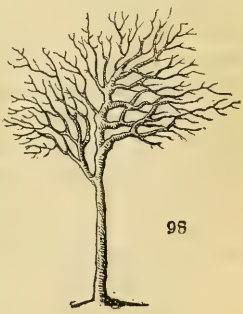


98

In my professional journeys during the period herein mentioned, I have paid peculiar attention to trees similarly circumstanced; and having, in the spring of the present year, travelled from Swanage, in Dorsetshire, along the southern coast to Falmouth, and, after crossing thence to Padstow, along the north coast of Cornwall and Devon, I can now speak, from personal observation, that such a progress as I have here described is common in the growth of deciduous trees exposed to the stroke of prevailing winds.

The formation of the head may be distinctly traced in nearly every tree we see thus unprotected. Indeed, this course of formation is evident in trees and plantations in situations even moderately exposed. Scarcely a forked oak, ash, or elm, can be seen in which we cannot discover a greater facility of growth on one side than the other, according with the particular current of wind with which such tree has been affected. A man lost in a forest in a foggy day might steer his way with no other compass than the general bearing of the heads of the *tall trees thereof!*

The tendency of these observations is, to show that shelter is requisite for the growth of wood of every kind, and that there are various ways of producing shelter. In some of the early enclosures of the Cotswold Hills, the allotments were bounded by walls, and quickset hedges were planted on the north and east sides; but such shelter kept off the sun during the greater part of the year; and a few thinking men planted their hedges on the south and west sides; arguing, that such hedges would have more sun, and a screen at the back would prevent a current of wind. It was soon discovered that these hedges had the advantage. Just such a shelter does a single tree form for itself after a given time of probation; and such a shelter should be found to preserve young trees placed in the very front of an exposed plantation. I could point out several instances near me, where trees on the south-west boundary of an exposed hanging wood have, within twenty years, thrown out very extensive, luxuriant, lateral branches. Such, too, is the effect in mixed plantations of firs and forest wood, after the former have made sufficient progress to break the strong current of the prevailing wind. But I would recommend, for early effect, that ash and sycamore be considered the best trees for the tops of hills, or other places much exposed: both are applicable to general use as timber or underwood, and are saleable whether young or old. Their great good qualities for growth are, that the young branches are stiff, and do not whip each other; and their buds are hardy, contending successfully against spring frosts, although the leaves of both are often injured by them.

Portway, Dec. 11. 1830.

These observations, which were first suggested by a row of beech trees near my residence, have since been fully confirmed by farther observations which I have made on timber trees of various kinds. I remember to have travelled on horseback, along a line parallel with the coast, from Swanage to Exeter, in which I counted scores of oaks, from 50 to 100 years old, showing, in their various ages and situations, full proof of their growth in the manner I have endeavoured to explain in the case of the beech trees; and, during the journey which I am now taking, I have, during this fortnight, noticed many oaks on high points of land, the heads of which plainly showed their proximity to the sea.

Shropshire, April 26. 1837.

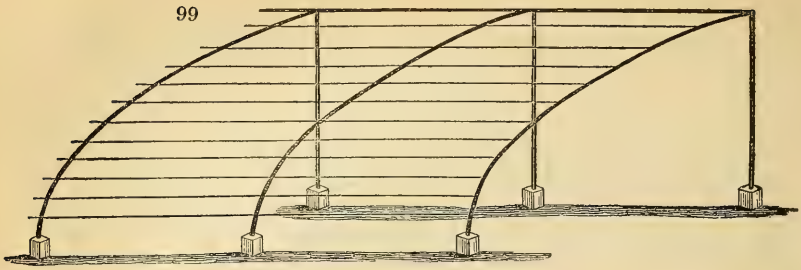
[We shall be glad to hear from any correspondent whether he has ever heard of the same results as those mentioned in the above very interesting article having taken place with the oak, or with other trees, when the head has grown to one side in conse-

quence of the action of the wind, more especially in Scotland. See remarks on this subject, applicable to Dorsetshire, in Vol. IX. p. 548., and Vol. X. p. 496.]

ART. VI. *A Method of training Pear Trees which might be advantageously adopted in Gardens where Walls cannot be afforded, and Standards will not thrive; with preliminary Observations respecting the List of Pears in the last Edition of the "Encyclopædia of Gardening."* By J. B. W.

THE list of pear trees in the *Encyclopædia of Gardening*, edit. 1835, containing varieties of first-rate excellence, ripening in succession from the earliest to the latest period to which that fruit can be kept without becoming valueless, is perhaps the best that could be made for those parts of England where the climate is not inferior to that of London. Here, in the north, however, I find that several sorts, which, in the vicinity of London, are amongst the most hardy, do not, on standard trees, acquire sufficient maturity to produce that quality in their flesh distinguished by the term "buttery;" without which, in my opinion, and in that of many others, a pear is not worth eating. This is especially the case with the beurré de Capiaumont and the white doyenné, although the fruit of both kinds attain their medium size, and have, externally, the appearance of being perfect and well ripened. The trees, likewise, are healthy and prolific. In the same piece of ground, and without the slightest advantage of soil or situation, the Louise bonne, Marie-Louise, passe-Colmar, and glout morceau, produce melting and well-flavoured fruit, although not equal, either in size or flavour, to what I have seen from standard trees in the garden of the Horticultural Society. The Duchesse d'Angoulême does not succeed here against an east (stone) wall: like the white doyenné and beurré de Capiaumont, the fruit looks well to the eye, but does not become melting. The Bézi Vaet is utterly worthless as a dessert pear, even with the advantage of an east wall. The Colmar, commonly considered a shy bearer, produces good crops of fine fruit with us, trained against a south-aspected stone wall: generally, it is fit for table in January and February; but I have kept it in sand till the end of May. The best autumn pears we possess are, the Jersey Louise bonne and the Seckle. For standard trees, in the north of England, I consider the Louise bonne (of Jersey) decidedly preferable to the Marie-Louise, being fully its equal in flavour, beauty, and size, and a much better bearer.

In making a selection of standard pears, then, for a northern climate, a bleak situation, or any other unfavourable locality, those sorts only should be selected which have been found to



succeed under similar disadvantageous circumstances. A good pear, however, is such an important auxiliary to the dessert, that a portion of walling should, if possible, be devoted to the finer kinds, particularly to that prince of pears, the Chaumontel, the delicious glout morceau and Easter beurré, and the long-keeping beurré rance. The last three are naturally so prolific, that one tree of each variety, if well managed, would produce sufficient fruit for the supply of a small family; and they would be fit for the table in succession. But the principal object of this communication is to make known a method of training pear trees which might be advantageously adopted in gardens where walls cannot be afforded, and standards will not thrive. It has been practised several years in the garden of S. Peploe, Esq., Garnstone, Herefordshire; and, I believe, has been found eminently successful. A trellis, which may be made either of wood, as at Garnstone, or of iron rods, as in *fig.* 99., is used to train the trees on.

This trellis might be made of any dimensions; but, of course, its height and width should be restricted within convenient limits for performing the necessary operations upon the trees. The trees are to be planted against the front of the trellis, at distances regulated by its width; and they should be trained in the fan manner. Young trees, with flexible branches, should be chosen, because such are better adapted to bend easily over the front part of the trellis.

A frame of this description, placed close before at all and thick evergreen hedge, fully exposed to the sun, and with a properly prepared border for the trees, would, I think, be almost equal to an east or a west wall; and, for obvious reasons, greatly to be preferred to the method suggested by Mr. Errington (Vol. XII. p. 128.). The soil recommended by Mr. Errington is unquestionably that best suited to the nature of the pear tree; and, although contrary to the directions promulgated by most writers on horticulture, I fully concur in his opinion as to the superiority of *shallow well-drained* borders to the deep pits usually made for the reception of the roots.

Feb. 1837.

ART. VII. *On the Shriveling of Grapes, and Recommendations of the early White Frontignan.* By J. ROBERTSON, Nurseryman.

THERE has been much discussion in your Magazine on the cause of, and remedy for, the frequent shriveling of grapes, about the period of ripening, in stoves and vineries. Being unluckily privileged, by my own ill success, to offer an opinion, I must attribute it, in my case (for I think it may proceed from various causes), to their being enveloped, at that season, in the warm humid atmosphere generally maintained in stoves, particularly where they are filled with exotics; by the constant process of watering, steaming, and dashing necessary to preserve their health, when it is an object of superior consideration to the success of the grapes. These, at the same time, being prematurely excited by the extreme heat near the glass, absorb the vapour in excess, and are hurried rapidly into the acetous fermentation before perfecting the vinous one.

Fruits of all sorts, during the process of ripening, and none more so, I believe, than the grape, require a pure dry atmosphere for the purpose of carrying off their redundant watery juices, which would otherwise dilute perniciously the saccharine principle, or prevent its formation. This redundancy may also proceed from the root; and in the correction of these causes must lie the remedy. I have found the thick-skinned grapes less liable to be affected in this manner than the thin.

In my collection I have got an early white Frontignan, or the muscat blanc de Jura, which, I think, is well adapted for the open walls about London, as it ripens in my pine stove as early as the Pitmaston white cluster, or the white muscadine. It is as highly flavoured as the old white Frontignan, and bears better, though not quite so large. I marked it in the Luxemburg catalogue as being set down earlier; and I procured it from Paris through M. Noisette. It may be had, I dare say, at the Chiswick Garden, I having sent a plant there.

Kilkenny, March 18. 1837.

ART. VIII. *On the Shriveling of Grapes.* By AGRONOME'S NEPHEW.

IN my former communication on the shriveling of grapes, (Vol. XI. p. 603.), I fancied I had hit on a plan that in some degree prevented the footstalks of the berries from turning black; but now I am a year older, and have had another year's practice, and chance, as it often does, has thrown in my way something which I could never have discovered without it, I am convinced that too moist an atmosphere is not the cause of the

shriveling of grapes, but that it arises from the inability of the vine to provide a sufficient quantity of nourishing matter for the berries. Though this disease is not generally noticed until the footstalks are gone black, yet any person who looks at grapes, or any thing else, as the Rev. W. T. Bree looks at them, (that is, with an observant and accurate eye), would see that the supply of nutriment is stopped a fortnight or more before the blackness on the footstalks appears. The inability of the vine to provide for its fruit may arise from different causes; such as over-cropping, the foliage being too crowded, &c. That crowded foliage will do it, I think the following will show: — A friend of mine sent me an eye of, as he said, a superior kind of white grape; and, as I had no rafter to spare for it, rather than throw it away, I planted it between two old vines, and trained it up under the sash. The first year I cut it down to one eye; the second year I did the same, and the old vines right and left did not seem to be the least affected by the presence of their new neighbour. Last year, being the third year, I cut it within a few buds of the top of the house, for the purpose of throwing it into bearing. This vine proved to be of the *Vitis vulpina* family; consequently it made very large leaves, as well as immense branches. I left the usual quantity of bunches on my old vines; and things seemed to proceed in a regular manner, until the colouring time came; when the old vines, that have ripened a good crop for many years in succession, lost half their crop, at least, by shriveling. I therefore decapitated *Vitis vulpina*. Three years ago, I planted some vines in a little green-house, the roof of which is immovable, and it was my intention, at the time of planting, to have ventilators put in the top of the back wall. However, other things intervening, time went on, till the vines became two years old, and no ventilators had been made. The vines having made good ripe wood under the fast roof, I thought I would risk the trial of their making good grapes under it. I therefore determined to try the effects of more heat and more moisture than ever I either practised or heard tell or read of. These vines pushing with the natural spring, I tied them up under the rafters, and had the floor of the house well saturated with water every morning, and two or three times during the day whenever it proved hot. The vines soon came into flower; and a few days afterwards, as I was thinning them, the heat was such, that it induced me to have a thermometer placed close to the topmost bunch, which in the hottest days stood at 120°; and, indeed, the temperature was quite that of a vapour bath. The berries swelled apace, and ripened off in the best manner, except two or three bursting, when green, with the violent heat. The above, I think, goes to prove that excessive moisture does not shrivel the grapes. — *Sept.* 19. 1836.

ART. IX. *On the Rust on Vines.* By J. WIGHTON, Gardener to Lord Stafford, Cossey Hall.

IN p. 9. of the present Volume, there appears a notice of the old vine at Hampton Court having become diseased, during the last year, by what is termed the rust; and you invite communications on the probable cause of that disease. I have often witnessed it on vines; and am aware that much difference of opinion exists among gardeners as to its cause. I am acquainted with a gentleman who resided for several years in Portugal; and he gives it as the current opinion in that country, that the rust is caused by unusually hot weather. He has often observed that it never appeared on both sides of a bunch of grapes, but only on the side exposed to the sun; and that it prevailed most in seasons of intense heat, when the leaves of the vine were parched and fell off, thus exposing the grapes still more to the hot sun.

My own opinion is, that the rust on vines is an external disease, produced by friction in various ways. It is observed in the article above alluded to, that the early vines at Hampton Court are not infected by the disease. I have seen it on early vines, but not so frequently as on the late ones. If it be enquired why the late vines are more liable to be infected with rust than the early ones, I think it can be satisfactorily accounted for, by the fact that early grapes are in general taken most care of. The head gardener usually thins the berries of early grapes himself; but the late vines are left to the attendance of his men. Their hands are generally very rough with labour; and, in handling a bunch of grapes, they can scarcely avoid scratching some of the berries; and such scratches on the tender skin of the grapes are sure to produce rust. I do not affirm that the disease is always so produced; but I believe it to be uniformly caused by some kind of rubbing or scratching. I hope that these observations may elicit further remarks from your correspondents, and that the question may thus be satisfactorily solved.

Cossey Hall Gardens, Feb. 28. 1837.

ART. X. *On the Cultivation of Currants.* By T. SYMONS.

CURRANTS being a very useful fruit for the table, as well as for tarts, preserving, &c., a hint may not be amiss to such as fail in cultivating them to that perfection which they are capable of being brought to by summer pruning. My method is this: — At the time they are about to set the fruit, I cut back, or pinch off, all such shoots as are not likely to be wanted for next year's

wood to about 2 in. from the spurs whereon the bunches of fruit are formed, taking care not to pinch them off too close, in which case the young fruit would wither. By this simple means, the fruit, by receiving more light and air, as well as a greater portion of assistance from the tree, will swell to the greatest perfection. Should other superfluous branches shoot forth when the fruit is in a more advanced state, they are removed in a similar way, remembering, throughout the season, to keep the bushes as clear as possible of unnecessary wood. The result of this mode of treatment gained me the first prize last year at the Cornwall Horticultural Show at Truro. I should imagine this mode of treatment will answer well for gooseberries; and I should like to know if the Lancashire growers pursue, in any way, a similar method to the above.

The remarks in Vol. X. p. 41. first induced me to try the effect of summer pruning upon the currant; and I shall certainly now generally adopt it. I trust that others will follow the example.

Clowance, April 3. 1837.

ART. XI. *A Mode of preserving Cauliflowers through the Winter.* By PETER MACKENZIE, Gardener, West Plean.

CAULIFLOWERS are a great favourite with all ranks of society; and I believe that, ever since they have been cultivated, means have been used to preserve them through the winter. I, like the rest of my brethren, have tried various methods to effect this; such as burying them in the earth, hanging them up by the roots, keeping them in frames, &c. But by none of these methods have I succeeded so well as by the one I will presently state, which I have not seen nor heard of being practised by any one else.

Towards the end of autumn, I make a bed, or beds, according to circumstances, of moist sand, in any cool house that will exclude the frost. The beds should be 4 in. deep. Having previously planted a greater number number of cauliflower plants than would be required at the time they are to come into use, I take the surplus, when in a good condition, and cut off their roots, leaving a stalk about 3 in. or 4 in. long; I then cut off all the leaves, except the innermost row; and, after shortening these, I insert the stalk into the sand-bed, and cover the cauliflower with a flower-pot. In this manner a large quantity may be contained in a small space: for example, a bed 12 ft. square will hold 288 heads, allowing 6 square inches to each head. Again, by taking those plants that are not in flower when the frost sets in, and preserving them, in a growing state,

in any house or shed where light is admitted, and which will preserve them from a severe frost, these will come into use about the month of January; and, by cutting them, and putting them in the sand-bed, they will continue fit for use till the spring. In this way I have kept cauliflowers to the end of April. It will be necessary, from time to time, to examine and cut off any decayed part that may appear.

West Plean, Jan. 7. 1837.

ART. XII. *On Kidneybeans.* By A. FORSYTH.

To force Kidneybeans. — Plant any of the dwarf sorts (the dun-coloured is generally preferred) in equal parts of rotten dung, reduced to a soil, and loam, in shallow twenty-four sized pots: say 1 in. crocks, 1 in. soil; then six beans, covering them with 1 in. more of soil. These pots may be stowed away in any corner of the stove, till the plants appear above ground, when they must be brought near the glass, and thinned out to three or four of the best plants. As they advance, they must be earthed up; and the leader may be pinched off, to render them short and bushy. When they come into flower, air must be admitted, to set the fruits; and every one must be gathered as soon as it is fit for the table, not to rob the others that are forming. The plants may be grown in a house at any temperature above freezing, and below blood-heat: the medium, 60° to 65°, I should prefer. They succeed well when planted out in a pit or frame, with or without bottom heat, in rows 18 in. apart, and 3 in. in the row; and, as they advance, they are to be topped as above, and sticked. Planted at Christmas, they require about eight weeks to bring fruit fit for the table, in a temperature as preferred above. *In the open border*, any of the sorts will answer well: rich light soil, well drained and sheltered, is best. They may be planted in rows 2 ft. apart, 2 in. asunder in the row, and 2 in. deep. It is seldom safe to have this plant, in leaf, unprotected, before the 1st of June, as the least frost would ruin all. They can be forwarded in any warm nook, planted in pots, or on strips of turf, in a cold frame or matted bed; from which they can be easily removed, uninjured, to their final place of destination. They must be stopped, sticked, and picked, as directed above for those indoors.

Isleworth, Jan. 6. 1837.

ART. XIII. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

RANUNCULÀCEÆ.

1631. CLE'MATIS
*cærùlea *Lindl.* violet-*flowered* ♄ or 10 ap V Japan 1836 L s.l Bot. reg. 1955.
Synonyme: C. cærùlea grandiflòra *Hort.*

This species has been already figured and noticed by us (Vol. XII. p. 358.), as *C.* azùrea grandiflòra *Swt.*; and to the information there given we add the following from Dr. Lindley:—"This is a charming addition to the climbers cultivated in England: it has a most graceful mode of growth; and the large violet flowers, with deep purple stamens, are more ornamental than those of any species of Clématis yet in this country. It is nearly related to *C.* flórida, from which it differs not only in the colour, delicacy, and transparency of its blossoms, but also in its leaves being only once ternate, and in the sepals not touching and overlapping each other at the edges." It was introduced into European gardens by Dr. Van Sieboldt; and Messrs. Low and Co. of Clapton received this species, with another very distinct one, called bícolor or Siebóldti, from Belgium in the spring of 1836. "It is a free-growing and profuse blooming plant, and will prove a great accession to our hardy climbers." (*Bot. Mag.*, May.)

Fabàceæ or *Leguminòsæ* § *Papilionàceæ.*

1964. *CY'TISUS* æólicus *Guss.*

In addition to what is stated, Vol. XII. p. 598., Professor Don says, that "the plant was raised from seeds obtained from the Royal Botanic Garden at Naples." It comes near to *C.* elongàtus; but it is altogether a larger plant, and the glabrous pods

readily distinguish it. If trained to a wall, it will no doubt flourish. (*Swt. Br. Fl.-Gard.*, May.)

Rosàceæ § Pòmeæ.

1506*a*. *STRANVÆ'SIA Lindl. THE STRANVÆSIA. (Named after the Honourable *William Fox Strangways*, a learned and indefatigable investigator of the flora of Europe.)
*glaucéscens *Lindl. grey-leaved* ♆ or 20 jn. W Nepal and Kamaon 1828 B co Bot. reg. 1956.
Synonyme: Cratæ'gus glaúca *Wall. Cat.*, 673.; *Arb. Brit.*, p. 844. f. 562, 563.

"It is about eleven years since the first plant of this new evergreen was first brought to England by Dr. Wallich, and placed in the garden of the Horticultural Society, under the name of *C*ratæ`gus glaúca, by which it has been extensively distributed. In the neighbourhood of London, the species is scarcely more hardy than a myrtle; but it grows very well against a wall where it is protected, and in such a situation it flowers in the month of June. In warmer counties, I have no doubt that it will form a valuable evergreen. The worst part of its habit is its pushing early in the spring, which exposes it to be damaged by frosts; and this seems to happen to it in its native country, if we can judge from the dried specimens distributed by the East India Company, all of which, when in flower, evidently have their leaves injured by frost, or some such accident. Its leaves are something like those of Photínia integrifòlia, with which it was mixed in Dr. Wallich's distribution of dried specimens. Its serrated leaves will, however, readily distinguish it. It takes by budding or grafting upon the common thorn, and may now be procured without difficulty in the nurseries under the name of *C*ratæ`gus glaúca." (*Bot. Reg.*, May.)

1506. *CRATÆ'GUS 12909 coccínea *Lin. Sp. Pl.*, 682.; *Torrey Fl.*, 1. p. 474.; *Dec. Prod.*, 2. p. 627.; *Arb. Brit.* p. 816.
Synonyme: *C.* glandulòsa *Willd. Sp. Pl.*, 2. p. 1002.; *Arb. Brit.*, p. 817.; *Dec. Prod.*, 2. p. 627.

Spec. Char. Leaves roundish or oblong, angular, inciso-serrate, wedge-shaped at the base, on long footstalks. Divisions of the calyx pinnatifid, glandular, as well as the petioles. Spines axillary, curved, longer than the petioles. Pomes spherical, corymbose, 3—4-stoned. Stones with a hard bony shell. (*Lindl.*)

C. c. var. macracántha *Lindl.*: syn. *C.* glandulòsa macracántha, *Bot. Reg.* 1912.; *C.* macracántha *Lodd. Cat.*; *Arb. Brit.*, p. 819. f. 572, 573.

The following adjustment of synonymes is given by Dr. Lindley: —

"*C.* glandulòsa of Willdenow, De Candolle, and Loudon, is the same species as *C.* coccínea of Linnæus.

"*C.* sanguínea of Pallas, referred to *C.* glandulòsa by Willdenow, De Candolle, and Loudon, is distinct from *C.* coccínea in its want of glands upon the calyx and petioles, as well as in its country and habit.

"*C.* glandulòsa of Aiton, referred by Willdenow, De Candolle, and Loudon, to *C.* coccínea, miscalled glandulòsa, is a totally different species, and may be the same as *C.* spathulàta." (*Bot. Reg.*, May.)

Onagràceæ.

1188. FU'CHSIA globòsa [Bot. iv. p. 75.
*élegans *Pax.* elegant-*flowered* s.pl 6 jn S Eng. hybrid 1836 C l.p Pax. mag. of

Raised by Mr. Silvercock, in his nursery at Chichester, from seeds produced by F. globòsa; and may be cultivated in any rich soil. Young plants are readily obtained from cuttings of the young branches. (*Pax. Mag.*, May.)

Caprifoliàceæ.

*SYMPHORICA'RPUS montànus *Humb., Ponpl, et Kunth Nov. Gen. et Sp.*, 3. p. 332. t. 296.; *Dec. Prod.*, 4. p. 339.
Synonyme: Symphòria montàna *Spreng. Syst. Veg.*, 1. p. 757.; *Hort. Brit.*, 29278.

Raised in 1829, in the garden of the late Mr. Barclay of Bury Hill, from seeds received from Cervantes, Professor of Botany at Mexico. (*The Botanist*, May.) There are plants in the Goldworth Arboretum.

Rubiàceæ.

638. GARDE'NIA
*pánnea *Lindl.* cloth-*leaved* or 4 jn.jl Y S. America ?1830 C l.p Bot. reg. 1952.

"A handsome stove shrub, native of the tropical parts of South America, whence it was received, some years since, by the Horticultural Society. It flowers in June and July; but, like a large number of the woody inhabitants of the tropics, seldom produces its blossoms in this country. The dull wrinkled foliage is by no means handsome; and, as the flowers are destitute of smell, they have nothing to recommend them beyond their size and curious colour." (*Bot. Reg.*, May.)

Gesneràceæ.

1698. GE'SNERA
*scéptrum *Mart.*
var. *ígneum *Hook.* pale-*flowered* or 3 s Rsh. Y Brazil 1835 C p.l Bot. mag. 3576.

"Our intercourse with Brazil has made known to our collections several species of this beautiful tropical genus, than which few are more ornamental to our stoves. The foliage is mostly of a full and vivid green; and the flowers are remarkable, in general, for their rich colour, frequently inclining to, or altogether, scarlet. This plant was introduced by Mr. Murray to the Glasgow Botanic Garden; and proves to be the var. ígneum of G. scéptrum of Martius." (*Bot. Mag.*, May.)

Ericàceæ § *Andromèdeæ.*

1040. EPIGÆ'A 11030 rèpens *Arb. Brit.*, p. 1126.
*rubicúnda *D. Don.* red-*flowered* pr ½ mr R ... 1836 L s.p Swt. Br. fl.-gard. 384.

"This new and very beautiful variety of Epigæ'a was raised by Mr. John Milne, of the Albion Road Nursery, Stoke Newington. The flowers are considerably larger than those of the white variety, and of a rich pink. It is an abundant flowerer, and few plants are more worthy of a place in the flower-garden. It will require to be grown in a border composed of peat, and to be treated as other American plants." It may be multiplied, like the common Epigæ'a, by divisions. (*Swt. Br. Fl.-Gard.*, May.)

Orchidàceæ.

2537. MAXILLA'RIA [3573.
Steèlii Hook. Steel's ⅇ ⍓ cu 2 ... Y. spotted with R Demerara 1836 D p.r.w Bot. mag.

This highly interesting orchideous plant was introduced, in July 1836, by Matthew Steele, Esq. from Demerara. "With the flower of Maxillària, it has a foliage quite at variance with any described species of that genus; attaining a height of 2 ft., and even 3 ft.; and proves a most valuable addition to our epiphytes." (*Bot. Mag.*, May.)

3478. PERISTE'RIA
*cérina *Lindl.* waxen ⅇ ⍓ or 1 jn Y Spanish Main 1835 D p.r.w Bot. reg. 1953.

"A new species of the curious genus Peristèria, imported from the Spanish Main by Mr. Knight of the King's Road. It is allied to the P. péndula *Bot. Mag.*, from which it differs in its spotless smaller flowers, in the crisped border of the middle lobe of the labellum, and especially in the absence of wings from the columns. This latter circumstance brings the genus Peristèria extremely near Maxillària Warreàna on the one hand, and Maxillària cristàta on the other. The flowers have a strong smell of juniper." (*Bot. Reg.*, May.)

2545. MEGACLI'NIUM [p.r.w Bot. reg. 1959.
*máximum *Lindl.* largest ⅇ ⍓ cu 1 au G. spotted with R. and Y Sierra Leone 1836 D

"In general appearance it is a good deal like M. falcàtum, from which it differs in having larger leaves, which are less deeply notched at the point, and more revolute at the edges; in its larger sabre-shaped rachis, which is as much as 9 in. long; and in the form of all the parts of the flower. Its lip is hardly so movable as in M. falcàtum, in which that part swings up and down with considerable rapidity, like the heads of some Chinese images, when set in motion by a sudden jar." Dr. Lindley thinks it will prove of easy cultivation. (*Bot. Reg.*, May.)

Iridàceæ.

122. SPARA'XIS [Swt. Br. fl.-gard. 383.
*stellàris *D. Don* starry-*flowered* ☿ △ or 1 my.jl P Cape of Good Hope 1836 O s.p.l

This very pretty Sparáxis "comes near to trícolor and versícolor, but is distinguished from both by the lanceolate pointed segments of its perianthium and exserted tube. Further experience, however, must determine whether these characters are sufficient to claim for it the rank of a distinct species; for the whole of the Cape *Iri*deæ vary much, both in colour and size, and the limits of many species still remain unsettled." (*Swt. Br. Fl.-Gard.*, May.)

Liliàceæ.

1063. *P*HALA'NGIUM 8903 pomeridiànum
Synonymes: Anthéricum pomeridiànum *Bot. Reg.*, 564.; *Schult. Fil. Syst.*, 7. p. 475.; *Scilla* pomeridiàna *Dec. Hort. Monsp.*, p. 143.; *Poir. Dict. Suppl.*, 5. p. 89.; *Redout. Lil.*, t. 421.

"The bulbs are said to be used as a substitute for soap." (*Swt. Br. Fl.-Gard.*, May.)

Aràceæ.

*PHILODE'NDRON *Lindl.* The Philodendron. (From *philcō*, to love, and *dendron*, a tree; in allusion to the habit of the plants of this genus to overrun trees in the South American forests.)
*crassinérvium *Lindl.* thick-ribbed ♃ ▭ cu 20 d G.W Brazil 1835 R l.p Bot. reg. 1958.

"This is one of the extraordinary climbers which, in tropical forests, lay hold of the trunks and limbs of trees, and fix themselves upon the bark, root on their surface, often twine round or strangle them in their embrace, or sometimes hang down, like cords or cables, from tree to tree, contributing, along with wild vines, bauhinias, and other powerful twisting leguminous plants (aristolochias, passion flowers, and the like), to render the forests impassable. *Pòthos* crassinérvia is a very different plant." (*Bot. Reg.*, May.)

REVIEWS.

Art. I. *Amaryllidàceæ; preceded by an Attempt to arrange the Monocotyledonous Orders, and followed by a Treatise on cross-bred Vegetables, and Supplement.* By the Hon. and Rev. W. Herbert. 48 plates. London, 1837. Price 1*l.* 5*s.* plain, and 1*l.* 18*s.* coloured.

[After perusing this very original and instructive work with very great interest and pleasure, we sent it to our correspondent Mr. Beaton, knowing that he had had much experience in the subject on which it treats; and requested him to favour us with his opinion of it, which he has given in the following article.]

The author's well-known celebrity in the botanical world, but more especially his profound knowledge of the natural order Amaryll*idàceæ*, could not fail to raise the highest expectations of this work among botanists and botanical cultivators, who have been looking anxiously for its appearance. A careful perusal of the work itself will abundantly show that such expectations were not ill-founded, as it is the most scientific, and at the same time the most practical, work on this department of practical botany that ever issued from the press. By practical botany, I mean the labours of the cultivator, blended with the researches of the botanist. Every page and suggestion is replete with practical and scientific information. It not only embraces a revision of the Amaryll*idàceæ*, but a complete and radical revision of the Jussieuan system of botany. This is, certainly, a bold attempt, which none but a master mind, in the full confidence of its own powers, could grapple with. Mr. Herbert argues with great force of reasoning and perspicuity on the insuperable defects and chaotic state of the Jussieuan system, and shows the utter impossibility of any modification of it ever being made subservient for the end in view; and, also, that those who apply their time and talents in clearing their way

through such a mass of undefined and undefinable matter are only heaping up insuperable difficulties on every side, from which they will never be able to extricate themselves. But, in thus combating the Jussieuan system, and the various ineffectual attempts which have been made, from time to time, to fix it on a firm and immutable basis, he disclaims entertaining the most distant idea of polemic discussion; but, from a firm conviction of its untenableness, "to consider dispassionately how a satisfactory arrangement can be made, and to lend my humble aid to those who are more competent to effect it." These assertions are fully borne out by subsequent facts. Mr. Herbert gives his unqualified praise to the ingenuity and perseverance of the distinguished cultivators of botanical science, "who are thus feeling their way in the dark;" yet he fully maintains that the system is so entirely artificial, and "repugnant to nature," that every attempt to modify it serves only to make "darkness visible." Gardeners are aware, that on the relative position of the stamens rests the fundamental principles of the Jussieuan system generally, but more particularly in the first grand division of it. In relation to this fact, the author observes, "I am at a loss to conceive in what manner it can possibly be substantiated, that the position of the stamens adopted by Jussieu is a more *natural* feature of classification than their number, by which Linnæus was guided in most of his classes. They are evidently facts of like nature, and deserve about equal weight." It will thus be seen that the author intends relying entirely on his own resources, in sketching out what he clearly shows to be a more natural and practical arrangement of botany. He does not, however, "feel himself competent to enter into all the details of this arrangement;" but "merely to point out the fundamental errors of the existing system, and the mode by which, according to his view, a better must be constructed." Whoever wishes to be fully acquainted with the author's view of the imperfections of the existing system, and the mode of proceeding by which he would have a more natural system established, must necessarily consult the work itself, and follow the author through the labyrinth of his forcible and lucid objections: suffice it to remark here, that the "fundamental errors" are made so apparent and self-evident as to carry conviction of their existence at first sight. Yet, as far as gardeners of the present day are concerned, it must be acknowledged that their botanical and physiological knowledge is so far deficient as to preclude them, in a great measure, from fully appreciating the philosophical views of the author relative to this subject. It is not at all improbable but this work may be the forerunner and cause of an entire revolution in the arrangement of natural affinities in the vegetable kingdom; and, therefore, all gardeners who desire to

excel in this department of their profession should make themselves early acquainted with the views propounded in it. That a clear knowledge of vegetable physiology and botany is indispensable to gardeners, need not be insisted on; though a knowledge of the former is of far the greatest importance to them; the former amounting to a matter of necessity, the latter being only a matter of convenience. Setting aside the enjoyments derivable from natural history generally, but more particularly from that department of it called botany, gardeners ought to have a good practical knowledge of botany, if it were merely for their own private convenience: therefore such a work as this under consideration, tending in an eminent degree to supply and simplify the means of acquiring this knowledge, cannot be too strongly urged on their consideration. The truth is, that much progress will not be made in the application of the science of botany to vegetable culture, till such a state of society occurs as will call forth a race of gardeners, any one of whom could produce a work of a similar nature to this of Mr. Herbert. Each gardener, in such a state of things, we may suppose, would take a natural order, and experiment and treat upon it as Mr. Herbert has done with Amaryll*idàceæ*.

After clearly pointing out the utter impossibility of ever arranging the *real* natural affinities of plants on a satisfactory basis under the Jussieuan system, Mr. Herbert points out, in the following comprehensive passage, the only mode by which it is ever likely to arrive at a desirable result: — "There is but one mode of proceeding with a view to place the divisions on a sound and durable footing; and that is, to found every separation on a single fact, and to work downwards from the first division, with cautious examination of the relative importance and consequent priority of the facts by which the subordinate divisions are to be limited. This has not yet been done; but, whether I live to see it accomplished or not, I am confident that, sooner or later, it must be effected; because it is the only mode of classification consistent with nature."

To show more clearly what he means by "simple facts," the author adduces the first grand divisions of the vegetable kingdom, the phanerogamous and cryptogamous, the dicotyledonous and monocotyledonous, and "perhaps acotyledonous," plants. "It will not appear," he adds, "that any kindred races are found indiscriminately in either division: these lines, therefore, are clear and substantial." Mr. Herbert then confidently asserts, that, if Jussieu had been aware of what horticultural experiments have revealed since his time, he would have adopted the same view as that laid down in this work; and that he only proposes applying "the doctrine of Jussieu to facts which have since come to light." These "facts" are so multitudinous and

connected, that extracts would only impair their force and importance; and, therefore, they must be consulted in full.

The work is divided into three sections: a preliminary treatise, a new arrangement of the Amaryll*idàceæ*, and a treatise on cross-bred vegetables; with a supplement and glossary; illustrated by forty-eight coloured plates of plants and parts of plants treated of in the body of the work, with elaborate dissections of the different parts of the inflorescence, &c., illustrative of the simplicity and importance of the author's new arrangement; which is a regular series of divisions and subdivisions, &c., of the different alliances of the Amaryll*idàceæ*; each division being separated from its next alliance by a simple fact, "the most obvious and ready to ascertain that could be found," in accordance with what has been already advanced: the whole being "intended to enable any person, however little skilled in botany, to ascertain easily to what order any monocotyledonous plant before him belongs." There is a leading feature in this portion of the work, which cannot be too highly praised; and, indeed, this part of the work is a perfect encyclopædia as far as the Amaryll*idàceæ* are concerned. Instead of exhausting the reader's patience with a long series of dry technicalities, inseparable from botanical descriptions, we have, at the termination of every section or family treated of, a popular and comprehensive digest of culture; botanical, geographical, or historical facts, &c.; in short, every thing bearing on the subject in hand. This enables the reader to get over dry technicalities imperceptibly, and is an inviting guide, which keeps up the interest to the end of the journey. A fair example of this portion of the work, and of the author's style, may be gathered from the following extract, taken incidentally from under a well-known hardy bulbous plant, Zephyránthes cándida: —

"This plant, conspicuous by its fleshy, semicylindrical, and rush-like leaves, which resist the severest frost of our usual winters, has ripened its seeds with me after snow had lain upon them for three weeks. I have seen the quicksilver 15° below the freezing point (Fahren.), without its losing more than the ends of its leaves. I have not been able to ascertain that it is indigenous in the west of South America, though abundant in old gardens in the valley of Lima. There is no difference in the hardiness of the constitution of the bulbs from Lima and those from Buenos Ayres, where the banks of the Plata are so covered with it, that it is understood that the river was called La Plata (meaning silver) on account of the profusion of its white blossom on the shore. I have had seventy flowers expanded at once, on a small patch of the plant, at Spofforth. It is strange that this plant, which thrives in the hot valley of Lima, should have stood out of doors here nine or ten years unprotected, without ever losing its leaves entirely. Perhaps the strong current of air which must accompany the rush of such a great body of water as the Plata, and the evaporation from it, occasions a degree of cold on its immediate banks which the latitude would not otherwise admit. There is, however, a mystery in the constitution of plants, which does not always depend upon their native climate. I raised two species of Gesneria from accidental seeds

lodging amongst the roots of the same plant of Pitcairnia, plucked off a rock in Brazil; one of which objected to the heat of a stove, and the other would not live through the winter without it. Candida flowers abundantly here under a warm south wall, upon the first autumnal rains after a season of drought, which does not, however, at all affect its foliage; and if they cease, its blossoming will be suspended, unless it be watered, and recommence later. I have an extraordinary variety (var. 4.) from Buenos Ayres, which flowers, year after year, with eight segments to the flower, eight stamens, four lobes to the style, and four cells to the capsule. It has a more robust scape, 1 ft. high, and very conspicuous large flowers, expanding full 3 in. I have seen accidental flowers of Gladioli with a supernumerary stamen, sepal, and petal, and even with two; and a regular fertile four-celled capsule on Camellia japonica; but this is the only instance I have observed of a seedling with such a variation permanent. My belief is, that this plant belongs to the genus intermediate between Zephyranthes and Cooperia, though I will not disturb it till the further species of those genera can be thoroughly examined. It differs from Zephyranthes, and agrees with Cooperia, in having deformed pollen; a point which, I am persuaded, must indicate generic diversity, though we may be sure that the diversity, if positive, would not be confined to such a secret feature. It differs from Zephyranthes in the stamen, and from the known Cooperias in the absence of a cylindrical tube, and in its expansion under sunshine; from both, in the substance of the leaf, and their permanency. The erect lobes of its stigma are peculiar to itself; and it has as yet resisted my repeated attempts to cross it with Zephyranthes. I suggest the name Argyropsis, if its separation should be established on further investigation, in allusion to its silvering the banks of its native river, and giving name to the Argentine republic. It comes very near, however, to Z. sessilis, which forms a link between it and the pedunculated species; and I can only separate it as a section of that genus.

"I learned from my lamented friend Dr. Carey, that the species of Zephyranthes which I had sent to him had multiplied prodigiously in the East Indies, as well as the Hippeastra; the former being a substitute for our crocuses, the latter for our tulips, in a tropical garden; and he was earnest in his application for every species of Zephyranthes.

"There is a little mystery in the expansion of candida. I have seen it open quite flat in warm sunshine; but I have, nevertheless, in every cold gloomy weather, with a north wind, seen its flowers standing at three fourths expansion at night; and, a few days after, when the wind was south-west, and warmer, the flowers were not near so open, even in the day; as if its expansions depended on the dryness of the atmosphere." (p. 178.)

The portion of the work on cross-bred vegetables may be divided into two parts; the first containing a history of cross breeding, from the time of its origin by Kölreuter, about 1770, till the author's and Mr. Knight's papers on the subject in the *Horticultural Transactions* and the *Philosophical Transactions;* its present aspect in this country; and the anticipations which may reasonably be entertained of its future progress, both in reference to its utility in guiding or correcting the arrangement of the botanist and the improvement of our flower-gardens. The second portion might not inaptly be called a historical and biographical account of all the known or reputed mule plants existing, or having had existence, either in this country or on the Continent; wherein their derivative or reputed origin is either confirmed or refuted, by tests hitherto found infallible. Here, the practised hybridist will find many hitherto inexpli-

cable mysteries explained and accounted for satisfactorily; many of his conjectural views confirmed or refuted, and, perhaps, a point or two on which he may have some misgivings. The uninitiated will find here every inducement to begin and prosecute the study; every rule which has hitherto been found availing laid down for his future guidance; and a vast number of conjectural suggestions, which may be found of much use to him under certain or difficult circumstances. About the time (1819) the author first made public his views on this subject, it was looked on with great distrust and alarm among botanists, "under an impression that the intermixture of species, which had been commenced, would confuse the labours of botanists, and force them to work their way through a wilderness of uncertainty; whereas it was evident to myself that it would, on the contrary, afford a test by which the accuracy of their distinctions might be more satisfactorily investigated, many of the errors of their system eradicated, and its details established upon a more solid foundation." Subsequently, the alarm thus "taken inconsiderately appears to have subsided;" and admissions been made, "by the most distinguished," in favour of the author's views. Setting aside these honourable "admissions in favour of the flower-garden," and applying this "test" to some of the existing and recent arrangements of different families of plants by different individuals, "the accuracy of their distinctions," it is feared, will be found on the wrong side of the scale. Two years' application of this "test" to De Candolle's arrangement of the Crucíferæ would make fearful disclosures; and, if a complete ericacetum were to be planted, according to the arrangement of that family in the *Arboretum Britannicum*, and a skilful hybridist afterwards let in, he might easily show that we do not manage these things better at home. The cause of the fertility or sterility in cross-bred productions has caused no inconsiderable degree of controversy; but it may now be said to be satisfactorily accounted for and settled. A great number of instances are adduced, to show that the fertility of a natural or artificial offspring depends on the constitutional similarity of the parents; and a dissimilarity in the constitution of the parents is, of course, a cause of barrenness. This is a grand point settled, and one which opens a wide field for the ingenuity of the cultivator in devising certain modifications of culture, with a view of changing or counteracting constitutional habits in the subjects of his experiments. Thus, for example, *Ribes* sanguíneum will not readily yield seeds under cultivation, and failed to do so under many experiments; but yielded under the following, viz. transplanting when on the point of opening its flowers. It has produced seeds freely under this treatment; and I have obtained a cross from it by the pollen of *R.* aúreum var. præ`cox of the nurseries; and, though

the plants are not yet in a condition to prove the identity of the cross, I have yet every reason to believe it a real one. The parents being previously in a high state of cultivation, I anticipate an enlargement in the inflorescence, with a fine glow of pale orange colour, and an improvement in the foliage of the offspring. This anticipation does not tally with Mr. Herbert's account of his success in raising camellias; yet I cannot perceive how any mode of management can affect the offspring, subsequent to the impregnation: but I may be in error, and speak under correction. Again, tube-shaped flowers, natives of warm climates, having an excess of sweet secretions surrounding the germen, will not generally yield seed in a damp atmosphere, such as is kept up in well-regulated plant stoves. If they are removed into a dry atmosphere, and the tube of the flower be slit up with the point of a pin, to let the nectar or accumulated moisture run off, they will be found to produce seeds, other circumstances being favourable. In some cases, the whole of the petals and stamens may be removed without much injury; and in others it is absolutely necessary to go to this extremity. Some do not ripen the pollen for many days after the expansion of the corolla; but others have it ripe before the flower opens; and some have the pollen ripe when the flower is merely in the bud, if I may use the term: Lechenaúlt*ia* is an instance of the latter. This little favourite has a small round cup on the top of the stigma, which botanists call indusium. This cup is wide open in the earliest stage of the flower: the anthers, as if anxious to conceal their treasure from the eye of the hybridiser, bend over the sides of this little cup, and discharge the pollen into it; the stigma begins to lengthen out; the cup collapses round the hidden treasure; and, by the time the flower is ready to expand, all traces of the stamens and anthers are gone; and, if you open the indusium with the point of a knife, you will see the pollen at the bottom of the cup. I shall now leave you to conjecture the cause of this mystery; first giving you an opinion of my own; viz. that all flowers bearing fertile stigmas will be found ultimately to produce seeds by undergoing some previous manipulation by the cultivator. Some experimentalists are satisfied that all is right when they extract the immature pollen, and apply that of a kindred sort; but this is the simplest part of the whole process, and might be taught to a child in two minutes. The power of modifying certain peculiarities in plants, in order to obtain seeds from them, is not sufficiently known yet; but it has not been overlooked by our author, who advances many excellent suggestions on the point: but we must look forward, for abundance of accumulated facts, before we shall be enabled to lay down rules for future guidance on this part of our business. I have exhausted my ingenuity in endeavouring to

procure mules between the different species of alstrœmerias, and between the species of oxalises, but to no purpose. I have flowered many thousand seedlings from the former, with but one variation from A. Hooker*iàna*, which lost therose blush of its parent, and assumed a dullish brown tint: this I have again united with its parent and other species; but the seedlings are not yet come to a flowering state. Whatever process may be found applicable for the production of seeds in monocotyledonous plants, I apprehend the converse will be a sure guide for dicotyledonous plants: the former may, probably, require an excess or repletion of developement, so to speak; the latter, an over-exertion of their vegetative powers. Corræ`*a* speciòsa, divested of its flower, and placed in a dry hot atmosphere, will cross with C. pulchélla, and the contrary. Something may be expected in this way. *L*áthyrus grandiflòrus will readily seed if the stigma is set at liberty by slitting the carina, or keel, which prevents its elongation. The author very justly recommends forcing such plants as it is desirable to obtain genuine seeds from. Should two species be forced, to obtain a genuine mule, the unripe anthers, taken from the first flowers, will ripen in a few days, and be available afterwards. Pollen taken from Cèreus speciosíssimus, in May, was found to fertilise the stígma of C. truncàtus in the following October. A mouse, unfortunately, however, carried away the fruit when half-ripe. Cèreus Ackermánn*ius*, though reputed to be a Mexican species, is only a British one. Several seedlings from C. speciòsus, now showing flower here, are apparently the same as C. Ackermánn*ius*; and will be past a doubt before this is published. The male parent, unfortunately, is not known: such is the inevitable result of imperfect notes of it. There is presumptive evidence of Fúchs*ia* arboréscens yielding to the pollen of F. globòsa by a previous over-exertion of its vital energies. A seedling from F. excorticàta, by a slender variety of F. grácilis, shows a singular mode of growth, approaching that of trailing; a great succulency of young wood; and a shade of the glaucous appearance on the under side of the leaf, peculiar to its female parent. A bigeneric production, between Gloxín*ia* speciòsa and Sinníng*ia* guttàta, has been obtained. But the catalogue, I am afraid, is already too tedious. The first idea of preserving pollen for future use, I derived from the *Magazine of Natural History*, vol. ii. p. 4.; and I found it of much service. In 1832, I obtained some calceolaria blossoms from the late Mr. Shepherd of the Liverpool Botanic Garden; and, after travelling in my specimen box for six weeks, they readily fertilised my own varieties at home. I have no doubt whatever but pollen, taken from the flowers on the Alps of Thibet, might be brought to this country in a hermetically sealed vessel, and be found as fit for performing its office in this

country as if it had been taken from the next garden.* Professor Rennie has laid down rules, in his *Alphabet of Gardening*, for cross-breeding; some of which are absolute nonsense, and others little to be relied on. The author before us strongly recommends gardeners to prosecute the study of cross-breeding. "I wish," he says, "I could excite cultivators to try if they can produce a cross breed between Phycélla and Habránthus; but I do not think that they will succeed." He would likewise wish to see Vallòta and Cyrtánthus tried in this way. In short, he wishes to see tried all rational experiments, with a view to ascertain natural affinities, and promote the decoration of the flower-garden. He is so full of his subject as to render it impossible to do justice to his work, save by extracting the whole. "To the cultivators of ornamental plants," he says, "the facility of raising hybrid varieties affords an endless source of interest and amusement. He sees in the several species of each genus that he possesses the materials with which he must work; and he considers in what manner he can blend them to the best advantage, looking to the several gifts in which each excels, whether of hardiness to endure our seasons, of brilliancy in its colours, of delicacy in its markings, of fragrance, or stature, or profusion of blossom; and he may anticipate with tolerable accuracy the probable aspect of the intermediate plant which he is permitted to create; for that term may be figuratively applied to the introtroduction into the world of a natural object which has, probably, never before existed in it." He has not half done with the rhododendrons yet. He crossed *R.* álta-clerénse with *R.* arbòreum, and expects the offspring to come near to the father in brilliancy of colour, with the hardiness of the female parent, and thus to effect the only mode by which plants in general may be acclimatised; but more especially the magnificent Nepal rhododendron. He failed in obtaining any satisfactory result by using mixed pollen. I have failed in a hundred instances of this nature. The fact appears to be, that the most allied pollen in the mixture takes the lead; and the fertilisation, once effected, neutralises the properties of the rest of the mixture. After having clearly ascertained the effect the pollen of one species had on the offspring of another species, I put the smallest particle I could take on the point of a needle on the stigma of the same flower; and, in a short time, I applied the pollen from the other species (whose influence I had already ascertained) to the same stigma. It had no effect on it; but there was a deficiency in the usual quantity. Again, I dusted the stigma so com-

* The author of this article has some observations on this subject, and on hybrid fuchsias, in Vol. XI. p. 580., which will well repay the practical gardener for reperusal, and which deserve, also, the notice of Mr. Herbert.—*Cond.*

pletely, as entirely to envelope it in foreign pollen, and afterwards applied the natural pollen on the top. It had no effect; and I had a cross offspring: so that, if I had sufficient pollen at command, by which I could entirely encrust the stigma, I should have little fear of the influence of other pollen, either natural or otherwise. There seems to be a peculiar attraction between certain stigmas and the pollen, which favours this experiment.

A curious experiment might be tried, by placing pollen on one division of a tripartite or multipartite stigma, to see what effect it had on all the ovules in the germen. If it was found to fertilise all the ovules, then, in lieu of a mixture of pollen, different pollen might be applied to the different lobes of a stigma, and thus produce a *multipolleniferous* offspring; and a most interesting point of physiology might easily be ascertained. But the subject is too wide a field to be taken up, in all its bearings, in an article of this kind. It is familiar to my mind, from having occupied a great portion of my attention for the last twenty years, or since I first saw a cucumber impregnated; and I do not think that I have exaggerated in any one degree: indeed, I have not been able to appreciate, or set forth, the value of this part of Mr. Herbert's labours. All that remains for me to say is, that any gardener, having the least spark of botanical spirit in his composition, ought not to rest satisfied till he has made himself master of what has been advanced by the author on this subject. Gardeners, and all lovers of plants, will be delighted to see, in this work, what accession is soon expected from the higher latitudes of tropical America, even in the natural order Amaryll*idàceæ*. No less than three dozens of new alstrœmerias, not including their allied congeners, the bomarias, of which, also, upwards of forty species are yet in store for us, are described in this work, and many plates of them given; some of which appear to be of surpassing beauty and elegance of growth. Mr. Herbert's remarks on the exclusive system at Kew are well worth attention: — "In 1831, I offered to add ten new species to that collection, in exchange for a few cuttings; but all to no purpose." There are many other valuable extracts, which deserve to be transcribed; such as flued borders, &c.; and a separate paragraph might be given on each of the author's new camellias; but I have not here space.

The author intends, "as opportunities may occur, to prepare memoranda for rectifying and supplying the deficiencies of this work; and any communications relating to it, if left for him, free of expense, at the publishers, will be attended to thankfully." There is an unavoidably slight mistake relative to the introduction of *C*rìnum octoflòrum, under that article, at p. 252., where it is said to have been introduced from the Spanish Main, by W. Gordon, Esq., my lamented late employer. Dr. Hamilton of

Plymouth introduced this plant, in 1833, from Caraccas; having sent to his friend there, Sir Robert Ker Porter, His Majesty's British consul, for the plant mentioned by Humboldt in his *Personal Narrative*, vol. iv. p. 82., so celebrated, on the banks of the Zuy, for its delightful fragrance, and known under the name of *Lirio hermoso*, which was supposed to be *P*ancràtium undulàtum. Whether this is the plant mentioned by Humboldt, or not, it is of delightful fragrance, and ought to be in every collection of Amaryll*idàceæ*. Mr. Low of Clapton has plants of it under the name of *P*ancràtium undulàtum; at least, I gave him plants of it, three years ago, under that name. Mr. Pontey of Plymouth is very likely to have it likewise, under the same name.

Mr. Herbert adds, that he will be very thankful to receive "any dry specimens, seeds, or roots, of newly introduced amaryllidaceous plants, especially from the western hemisphere," to enable him to make future editions of his work as complete as possible. The following species are more particularly wanting in his already extensive collection; and it is earnestly hoped, if this should come under the eye of any one in possession of any or each of them, they will testify their love of science by sending duplicates to the author as above: — *C*rìnum Forbes*iànum*, Amarýllis grandiflòra; Brunsvíg*ia* striàta, mìnor, rádula; Nerìn*e* marginàta; Strumària héssea, imhòfia, carpolỳza; and *P*ancràtium canariénse, amongst the African: Sternbérg*ia*, Ermosìn*a* (*L*eucòjum) carpáthica, Lapìedra, Vagària, Tapeinánthus; Hermìon*e* élegans, serótina; Quélt*ia j*uncifòlia, pùmila, pusílla; Ganymèd*es* cérnuus (triándrus), càpax, and refléxus; seed of Quélt*ia* fœ'tida, odòra, montàna, Macleàn*a*, among the species of the Old World. — *D. B. Haffield, near Ledbury, April*, 1837.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

The Influence of Vapour on Vegetation. — Messrs. Edwards and Colin have read, at the Academy of Sciences, a third memoir on the influence of vapour on all the periods of vegetation. They observed, first, that the grains of winter wheat did not germinate in air, because they were not saturated with moisture; but that the germination, which, when the grains are saturated with moisture, takes place in about eight days, happens in from sixteen to twenty-four hours, if the grain are plunged partly in water. From much experience, they have discovered that a temperature nearly constant (for example, that of a cellar of 50° Fahr.) is better for germination than a more elevated, but variable, temperature; since the variations of temperature prevent the air from being constantly saturated with moisture. It is worthy of remark, that the grains absorb more water in the latter case than when exposed to the uniform temperature of a cellar.

There are two conditions necessary for germination to take place in air:

first, a certain proportion of water in the grains; and, secondly, that the air surrounding them be in an extremely moist state.

In air thus charged with moisture the grain commences by absorbing water; and, when it has absorbed a sufficient quantity, if the temperature is constant, the air, still saturated with vapour, keeps the external membrane in a state of humidity favourable to vegetation. If the humidity of the air varies, then the external membrane is not humid enough to perform its functions.

Messrs. Edwards and Colin have studied, according to these principles, the effect of the different kinds of humid soil on germination; and, finally, they have determined the effects of air saturated with vapour on vegetation, and have arrived at the result, that this is the condition of the air the most favourable for almost all plants.

In confirmation of this view, they have cited the observations made at Havanna by M. De la Sagra, and the practice in the stoves in England; where, by saturating the air with vapour, pine-apples are obtained of the weight of 8 lb. (*L'E'cho du Monde Savant*, April 12. 1837.)

Connexion between Meteorology and Vegetation. — " M. Boussingault has addressed a note to the Académie des Sciences of Paris, which is entitled ' Comparative Examination of the Meteorological Circumstances under which our common Grains (the Cereàlia), Turkey Wheat (Maize), and Potatoes, vegetate at the Equator, and in the Temperate Zone.' In this examination, the author has first made investigations into the time which elapses between the first springing of the plant and its full maturity. He then determined the temperature of the space of time which separates these two extreme epochs of vegetable life. By comparing these data concerning any given plant which is cultivated both in Europe and America, he arrives at this curious result: that the number of days that separate the commencement of vegetation from its maturity is more considerable in proportion as the mean temperature under the influence of which the plant grows is less; the duration of the vegetation will be equal, however different the climate may be, if this temperature is identical in the two places; and it will be shorter or longer, according as the mean heat of the period of time necessary for the accomplishment of the vegetation is itself greater or less; in other words, the duration of the vegetation appears to be in the inverse ratio of the mean temperatures. So that, if you multiply the number of days during which any given plant vegetates in these distant climates by the mean temperature of the actual period of its vegetation, you will obtain numbers which are very nearly equal. This result is not only remarkable, insomuch as it seems to indicate that, under all climates, the same annual plant receives, in the course of its existence, an equal quantity of heat; but it leads also to a direct practical result, in enabling us to decide upon the possibility of introducing any particular vegetable into a country, as soon as we know the mean temperature of the months there." (*Phil. Journ.*, vol. xxii. p. 383., 1837.)

Kyanising Wood for Garden Purposes. — In Vol. XI. p. 536., a short notice is given of the nature of Mr. Kyan's process for the preservation, not only of every kind of wood, but also of every kind of vegetable fibre, whether in the form of cloth or cordage. The object of Mr. Kyan's composition is, to effect for wood what tanning effects for leather; and the chemical rationale of both processes will be found given in the *Architectural Magazine*, vol. ii. p. 236. During the last twelvemonths, we have heard various accounts of the success of Mr. Kyan's invention; and the general effect upon our minds, till lately, has been rather unfavourable towards its use than otherwise. Mr. D. Beaton, however, informs us, that, while at Haffield (which place he has just left: see p. 205.), he had an opportunity of using it and seeing it used; and that he has formed a very favourable opinion, at least as to the use which might be made of it in gardening. He has had several deal boards saturated with it, and tallies for naming plants cut out of them; and he has seen thin elm boards, which, after being newly sawn up, had been saturated with the composition, remain in the sun, against a wall with a southern exposure, a whole summer,

without shrinking or twisting in the slightest degree. He recommends all boards intended for hot-bed frames, plant-boxes, and all similar purposes, to be Kyanised: and we would farther suggest, that the process should be extended to all kinds of rods and stakes used for tying up plants, or for protecting single trees (such as those recommended by Mr. Lawrence, p. 166.); to all rods, twigs, and boards used in summer-houses, rustic vases, ornamental fences, and espalier rails; and to all basket-work, hampers, wicker protectors for plants, &c. We would recommend all bast mats to be immersed in Kyan's composition; all netting and canvass made of hemp or flax; and all garden lines, sash-lines, packthread for tying plants, lists for nailing wall-trees, &c. It is only necessary to send the articles which are to be Kyanised to the nearest Kyan's tank, where the process will be effected in forty or fifty hours, at a mere trifle of expense. These tanks are now established in various towns; and several gentlemen have private tanks for their own use. If the benefits to be derived from this composition come at all near to what is held out by the patentee, by Dr. Birkbeck, and by Dr. Dickson, in his late lectures on the Botany of Architecture before the Institute of British Architects, wood tanneries will soon be as common as tanneries for leather. There is a tank at Blackwall, where any gardener, within ten miles of London may (with his master's permission) try some wood, cut into the form of tallies for pots, and also for plants in the open air, and other specimens of the articles mentioned above; and we should like much if they would do so, and, in a year or two, let us know the result. We intend ourselves to have some experiments tried; an account of all of which, with a particular account of the process, we shall give in the *Arboretum Britannicum*. In the mean time, we should be glad to hear the experience of different persons on the subject, from different parts of the country. — *Cond.*

Anticorrosive Paint. — Some years ago, we strongly recommended this paint, from our own experience, more especially for protecting iron fences; but we have always found painters set their faces against it, on account of its only requiring one coat, or at most two, being very cheap to purchase, and ruinous to the brushes for laying it on. We have therefore said little about it for the last two or three years: but Mr. Beaton has revived the subject in our minds, by stating to us that he had tried it on an old rusty iron fence, after having had the rust scraped off, and one coat of the "anticorrosion," as the venders call it, laid on by a common labourer. A single coat he found effectually to prevent the rust from coming through. We ought to mention that this paint forms such a hard, rough, stone-like casing on the surface of woodwork, that, if it should require to be cut up by saws or hatchets, it takes off their edge almost immediately; and, consequently, all carpenters and joiners are against it, as well as the painters. The basis of the "anticorrosion" is, or ought to be, composed of the powdered scoriæ from lead-works; but it is often adulterated with powdered stone-bottles, powdered stones, and even roadstuff. — *Cond.*

An improved Mode of Land-Surveying, by Mr. John Sang, land-surveyor, of Kirkaldy, is described in the number of *Jameson's Journal* for April last. By it, the contents of any piece of ground, whether of an even or of an irregular surface, is obtained with much greater accuracy than by the common modes. It would occupy too much space to describe Mr. Sang's method here; but those who are interested in the subject will do well to consult the publication alluded to, or to apply to Mr. Sang himself, who is well known to be one of the most elegant and accurate surveyors and mappers of estates in Britain. — *Cond.*

P*òa nemoràlis var. nervòsa*, the Hudson's Bay meadow-grass, appears to be one of the greatest acquisitions to the agriculturists that has been made since the introduction of the Italian rye-grass. This grass has been brought into notice by Mr. Bishop, at Methven Castle, and will be found mentioned in the *Report of Messrs. Dickson and Turnbull's Agricultural Museum*, at Perth. (See Vol. X. p. 507.) Much of the value of the Hudson's Bay meadow-grass, Mr.

Bishop informs us, arises from a property which it possesses, and which is common to no other grass cultivated in Scotland, viz.; that of the flower-stem, after being cropped, reproducing shoots from the stem as well as the root; in consequence of which it continues growing throughout the whole year, particularly in the latter part of summer and autumn. Mr. Bishop adds, "I fear not to state that it is the best sole [turf] grass in Britain. I have saved several bushels of its seed, which I am now sowing in mixture with other grasses, and by itself."

In the *Perthshire Courier* for April 21. 1836, it is stated, that a specimen of the Hudson's Bay meadow-grass, mown off cold damp land, on the 14th of that month, was exhibited in Mr. Turnbull's seed-shop in Perth; and the stems averaged from 18 in. to 20 in. in length, showing all the fullness and verdure of midsummer. We trust this grass will be very generally tried, not only in Britain, but throughout Europe; and more especially in the northern climates, for which it seems particularly adapted. — *Cond.*

New Varieties of Potatoes. — Mr. Bishop, to whom we are indebted for the Hudson's Bay meadow-grass, has raised a number of new varieties of potato from seed, which he purposes to bring into cultivation, as substitutes for the old varieties, which he, Mr. Gorrie, and Mr. Aikin of Castledouglas, consider to have failed of late years, chiefly from a deficiency of vitality in the sets, which consequently renders them unable to withstand the contingencies of bad seasons, &c. These potatoes, and also the grass-seeds, are sent by Messrs. Dickson and Turnbull of Perth to all parts of the country. — *Cond.*

Transmitting Seeds from China. — I have just got a very interesting collection of seeds direct from China. They are packed in a novel way, in little China jars, full of bone-ashes, and tied over with bladder. They seem to have come very safe. The bladder smells of oil of sassafras. — *R. Mallet. Ryder's Row, Dublin, May* 11. 1837.

Plant Markers. — Zinc is the only fit ingredient for labels, whether to be used in the open ground or in pots. A sheet of zinc is easily cut by the gardener, with strong scissors, into labels of whatever size he may want. If the zinc is greasy, the labels should be steeped for a minute or two in diluted nitric acid. The following receipt for making ink for writing on the zinc was communicated to me by a gentleman who was in the habit of using it, and I have found it indelible. Take verdigrise in powder, ʒi.; sal ammoniac in powder, ʒi.; lampblack, ʒfs.; water, ʒx. Mix carefully in a mortar: keep the ink in a bottle, well corked. It must be well shaken before the pen is dipped in it. (*Herbert's Amaryllidàceæ*, p. 411.) Zinc labels, and also the ink, may be obtained of Mr. Charlwood.

A Hybrid between the Cabbage and Horseradish is said to have been produced by M. Sageret of Paris. The plant has some seed-pods, which resemble the short pod, or silicula, of the Cochleària, and some the long pod siliqua of the *Brássica*. "In consequence of M. Sageret's statement, I tried, in 1835, to impregnate a plant of *Brássica* with the horseradish, and with the pollen of two or three other genera of Crucíferæ; but I did not obtain a single seed from at least fifty flowers, on which the experiments were tried, all other flowers being cut off from the plant. I beg to be understood as not denying M. Sageret's assertion, but requiring better proof of the accuracy of a fact so important to science, in which he may be mistaken; and more detailed particulars, and especially the production of the plants; and I invite M. Sageret to communicate one of them to the Horticultural Society of London, that opportunities may be afforded of examining it carefully." (*Herbert's Amaryllidàceæ*, p. 353.) We hope our correspondent M. Vilmorin will point out this passage to M. Sageret.

Grapes ripened without the Sun's Rays. — The following fact will prove that grapes may attain their full size, and become perfectly ripe, without receiving the immediate rays of the sun, if the vine on which they grow receive the sun's necessary warmth: — On the south side of the Orphan Asylum at Oranienburg there is a vine of the white gut-edels, which is partly trained over an

outer casement of the boys' sleeping-room, so that the window cannot be opened. In the spring of last year (1836), a fruit-bud of the vine found its way through a chink in the window, not wider than a single straw, and grew well. Although confined to the narrow space between the inner and the outer window, in which not a single ray of the sun penetrated throughout the whole year, the grapes continued to increase in size, and kept pace with those on the same vine in the open air, and ripened when they did, in the month of October. The bunch consisted of about fifty grapes, of a tolerable size, and particularly sweet. As this may be interesting to others, as well as useful as a reference, I wish to make it known to the lovers of gardening generally. (*Garten Zeitung*, Jan. 28. 1837.)

Art. II. *Foreign Notices.*

GERMANY.

The Loránthus europæ'us. — Be so good as to tell M. Rauch that I very much doubt if the plants or seeds of the Loránthus europæ'us, which he wished to procure from me, can ever be transplanted in a garden. The plants could only be sent on an oak tree. My late assistant, Dr. Heyne, a very skilful gardener, tried for several years to make the seeds germinate on the oak, and also tried those that had already germinated on another tree, even all sorts of ways with new seed. He gave the berries to blackbirds and poultry, and then tried the seed, but in vain. It was the same with every attempt of planting, budding, or grafting. In the meantime, I will send M. Rauch berries and twigs, with which he can try his skill. In the parks of Schönbrunn and Laxenburg, it grows so plentifully on the oaks, that it has almost destroyed them, and has transplanted itself on the fruit trees in the adjoining orchards. (*Extract of a Letter from Baron Jacquin of Vienna to Mr. Bauer of Kew.*)

As the loranthus grows upon fruit trees, like the mistletoe, it may, doubtless, be propagated in the manner suggested by Mr. Beaton, in p. 206.; and we would strongly recommend our friend M. Rauch of Vienna to make the attempt; and, if he succeeds, we would beg of him to send a plant to us, or to the London Horticultural Society. In the meantime, berries and specimens, as promised by Baron Jacquin, will be highly acceptable to M. Francis Rauch, and to ourselves. — *Cond.*

Stuttgard, April 21. 1837. — D. C. Kerner is very anxious to dispose of a copy of the *Hortus Sempervirens*, of J. S. De Kerner. It was originally published in 71 volumes, each volume containing 12 plates, and 12 leaves of text. The paper is vellum, 2 ft. by 1½ ft. The price of each volume, when published, was 18*l.*; and a copy of the whole work is now offered for 400*l.* The plants figured and described are the more rare and magnificent of West Indian species. — *W. Hertz.* [We should hope that a copy of this work will be purchased by the British Museum, or by some wealthy botanist in this country, as we believe there is not at present a copy of Kerner's work in Great Britain. — *Cond.*]

Art. III. *Retrospective Criticism.*

Mr. Anderson's Mode of protecting Seeds from the Attack of Birds (p. 172.), by suspending a black thread line over the bed 10 in. or 12 in. high (p. 172.). I was induced to try the plan, being much annoyed by sparrows and pied or chaff finches; and I feel bound to state that I have found it very efficacious, the birds seldom going near the beds when threaded. I noticed a congregation of finches, a few days ago, upon a cherry tree, near to an asparagus bed sown with radish and edged with mustard and cress, but guarded by the threads. One of these dropped down and reconnoitred; and flew up again, after parading nearly round the bed. Another or two did the same; and one ventured upon the bed; but it soon flew away, and the whole followed. I have other seed-

beds guarded with the thread, and find the plan answers. It is so simple, and so useful, that Mr. Anderson is entitled to the thanks of all gardeners. It only wants a fair trial. If market-gardeners, who sow great breadths of the *Brássica* tribe, as well as other seeds connected with their business, were to employ this method, I have no doubt one half the seed generally used might be saved; the expense of thread and time in putting it up being comparatively nothing. I should advise the thread to be no more than 2 ft. apart in lines; and, when the beds are long, to support the line every 3 or 4 yards with slender forked sticks, firmly fixed in the ground. — *M. Westwood. Grove, Hammersmith, April* 21. 1837.

Grafting the Mistletoe. — I have just received most important information respecting the grafting of the mistletoe, from Mr. Pitt. The spaces between the joints, which botanists call internodia, will not do for grafting; there must be a joint let into the bark of the stock in grafting, or a scion spliced off with a heel, as it is called, and the heel inserted. If this should be found correct (and I have no doubt whatever on the point), it is a curious fact gained relative to the nature, constitution, and habits, of this singular plant. There must be some sort of absorbents analogous to the spongioles of fibrous roots, in the joints of the mistletoe, by which it is enabled to draw its vegetable nourishment. If the mistletoe is headed down, it will spring out with increased vigour, like other trees. Young shoots, obtained in this way, with a heel of the old wood, and bark attached, would make excellent grafts. The internodia appear to be incapable of producing adventitious buds; but any joint of mistletoe will push out after the top is cut off. The mistletoe cannot be eradicated from fruit trees, without cutting the bough below its junction, or disbarking the whole of the piece attached to the bough. — *D. B. Haffield, near Ledbury, May* 8. 1837.

Epiphýllum truncàtum on Peréskia aculeàta. (p. 139.) — Mr. Symons of Clowance states, that he finds the *Epiphýllum truncàtum* flourish and blossom well when worked on the *Cáctus* triangulàris; but doubts whether it would do on the Peréskia aculeàta or not. I should therefore wish to inform him, that I have seen several remarkably fine plants of the E. truncàtum worked on the P. aculeàta, and flowering luxuriantly. They do, however, require support above the insertion, as the head is apt, from its weight, to burst the bark, and disunite itself from the stock. The stock is headed down, and a notch cut in the end of it, so as to admit the graft, it being cut in the form of a wedge. (*fig.* 100.) We have several small plants in the Oxford garden doing pretty well; and at Moor Park, Hertfordshire, there were, in 1834, several very fine large plants grafted in this manner. — *W. H. B. Botanic Garden, Oxford, April*, 1837.

100

Art. IV. *Queries and Answers.*

The Theory of the Rise and Fall of the Sap in A'cer saccharinum when tapped for its Juice. — You are aware, I presume, that immense quantities of sugar are annually made from the juice of the *A'cer* saccharinum in the west of Pennsylvania and New York, with which our forests abound (Professor Kidd, in his *Bridgewater Treatise*, says "they are cultivated"!); and, as it has puzzled me to explain the peculiarities attending the flow of this juice, I have resolved to state them to you. 1. It is as completely locked up by continued warmth, as by frost, and only flows by the alternate operation of these agents: yet the same degrees of heat, even after frost, have not always the same effect. Thus, a warm south wind stops the flowing more than a cool north-west wind. A bracing wind promotes the discharge, and a relaxing wind checks it. 2. The juice flows for twenty-four hours after a frost; but, when a tapped tree has ceased, tap a new tree, and considerable flow will take place, as if a certain quantity were discharged by the frost. The juice flows from all sides of the incision. 3. Tap a tree early in the morning, after a cold night, and no juice will flow:

tap it a few hours after, if the day be moderately warm, and the juice will issue in streams. February, and early in March, are the months in which the sugar is made. The people encamp in the woods, and remain there until the trees cease to flow, or they have procured as much as they require. Now, I wish to know, if the saccharine juice be sap, how it happens that a moderately cold night is essential to an abundant flow next day? The farmers told me, "We can do nothing in sugar-making without cold nights." I thought that the sap never flowed until an increase of temperature took place? — *J. M. Philadelphia, March* 16. 1837.

Why are Chaffinches deterred by a Line of black Thread, when they do not dread a Thread with Bits of Rag attached to it? It has struck me that this curious fact, mentioned by Mr. Anderson (p. 172.), is quite analogous to the circumstances stated by Mr. Spence in the *Transactions of the Entomological Society* (described in the *Architectural Magazine*, vol. ii. p. 188., and quoted below), that flies will not pass through a net with the meshes 1 in. wide, by which means rooms may be kept quite clear from them by hanging a net of this kind in front of the window. To what is the existence of dread in both cases attributable? — *J. O. W. May* 17. 1837.

"*The Italian Mode of excluding the Common House Fly* (*Músca doméstica* L.) *from Apartments.* — This mode was pointed out to William Spence, Esq., in Italy, two or three years ago, and is published in the first number of the *Trans. of the Entomological Society;* and his son has subsequently discovered that it was known in the time of Herodotus, and practised by the fishermen of Egypt. It is simply to cover the openings of the windows by a net of white or light-coloured thread. It is remarkable that the meshes of this net may be an inch or more in diameter, so that there is actually no physical obstacle presented to the entrance of the flies even with expanded wings. The flies seem to be deterred from entering from some inexplicable dread of venturing within the network. It is even found that, 'if small nails be fixed all round the window frame, at the distance of about an inch from each other, and threads be then stretched across both vertically and horizontally, the apparatus will be equally effectual in excluding the flies.' It is essential, however, that 'the light should enter the room on one side of it only; for if there be a thorough light, either from an opposite or side window, the flies pass through the net without scruple.' (*Trans. Ent. Soc.*, i. 4.)

"The above facts are of interest both to the occupiers of houses and shops in temperate climates, and the architects of houses for warm countries. They also supply useful hints to butchers, and, indeed, to all persons to whom flies and gnats are an annoyance. The facts further show, that sciences apparently the most remote from architecture may yet afford useful hints for improving that art. To gardeners these facts afford excellent hints for excluding flies from vineries and peach-houses, and from ripe grapes and other fruit against walls. — *Cond.*"

Otiorhýnchus sulcàtus. — It appears that this destructive insect, of whose habits, as injurious to collections of succulent plants, an account is given by Mr. Westwood in p. 158., is not confined to that tribe of plants, but is occasionally injurious to wall fruit and vines, as appears from the following communications, which were accompanied by specimens of the weevils in question: —

"These insects are from the peach-house at Hampton Court. They eat holes in the fruit, and eat the leaves to a great extent; so much so, that the gardeners are obliged to get up in the nighttime and catch them. In the daytime the insects go into crevices in the wall." — *J. Castles. Botanic Garden, Twickenham, May* 12. 1837.

"An insect greatly resembling that described, and figured in p. 158.*, was

* The specimens sent with this communication were specifically identical with the weevils raised from succulent plants, as described in the page referred to, and those received from Hampton Court. — *J. O. W. May* 17. 1837.

very troublesome upon my vines last year, by eating the leaves. They always fed in the night, and hid themselves in crevices during the day. When shaken off the tree upon the ground, they remained motionless, as if dead; and, being of a dirty black colour, they were by no means easily discovered. We never had this insect till last year, when they appeared in great numbers." — *J. B. W. Kiplin, Catterick, April* 21. 1837.

Where do the larvæ of these vine and peach-feeding individuals live? — *J. O. W. May* 17. 1837.

Brùchus pisi. — Seeing, on the cover of your Magazine for April, 1837, that you request gardeners, bailiffs, and others to forward any kind of insects to you for Mr. Westwood's examination, I send these, of which I shall shortly give you the history. I received two packets of early Dutch peas, which were distributed among the members of the Hampshire Horticultural Society, on March 10. 1837. When I came to open the packets to sow the peas, about the beginning of April, I found them full of the insects sent, which were such as I had never observed before. I then determined to forward one of the packets to you, in the hope through that means to know its name, and if it is common. — *A Constant Reader. Winchester, May* 15. 1837.

The insects sent with this communication are the Brùchus pìsi of Linnæus, in a living state. This species, according to that author, is indigenous to North America, but is now, unfortunately, completely naturalised in the north of Europe, although, seventy years ago, it was only known in the more southerly parts of this continent. Of this insect Kirby and Spence observe: "In a late stage of growth, great havoc is often made in peas by the grub of a small beetle (*Brùchus granàrius L.*), which will sometimes lay an egg in every pea of a pod, and thus destroy it. In this country, however, the mischief caused by the *Brùchus* is seldom very serious; but in North America another species (*B.* pìsi *L.*) is most alarmingly destructive; its ravages being at one time so universal as to put an end, in some places, to the cultivation of that favourite pulse. No wonder, then, that Kalm should have been thrown into such a trepidation, upon discovering some of these pestilent insects just disclosed in a parcel of peas he had brought from that country, lest he should be the instrument of introducing so fatal an evil into his beloved Sweden." (*Introd. to Ent.*, vol. i. p. 178.)

Here it is evident that the injury is caused to unhoused peas. But Stephens, speaking of this insect, says, "Found occasionally within the metropolitan district; but, I suspect, not a truly indigenous species: it sometimes abounds in depositories of peas to a very destructive extent." (*Illustr.*, vol. iv. p. 213.) Its precise habits, with indications of the periods occupied in its transformations, and especially of the time when it arrives at the perfect state, have not been ascertained, although very necessary, as the destruction of the beetle, previous to laying its eggs, would greatly prevent the spreading of the mischief. — *J. O. W. May* 17. 1837.

P.S. I observe that, in almost every instance, it is the largest peas which are attacked. The insects are still enclosed in some of them.

Art. V. *Covent Garden Market.*

The continuation of cold weather during the principal part of the present month has prevented the market from being supplied in its usual abundance at this season: in consequence, prices have ruled rather higher for articles generally in demand; such as asparagus, which has realised high prices, especially in the early part of the month, before any from the natural ground had been furnished: at present the supply is very limited, the quality good, and prices moderate. Of peas, we have as yet had but very few, and those have by no means been in request. Early spring cabbages are in demand, with coleworts, spinach, &c.; but little broccoli, of the late varieties, is now to be observed. Rhubarb is very plentiful, and certainly very cheap: on Saturday last, sixteen waggon and four cart-loads, besides a considerable

quantity in baskets, were readily disposed of. Radishes have come to hand slowly, in consequence of the very cold weather. A few early turnips have been produced; so that the market has been supplied with them, in greater or less quantity, throughout the year; as well as with carrots and other articles. Onions have been in demand, and still continue to realise good prices, although the season for their consumption is past. Potatoes have been supplied in considerable quantities; but, in consequence of the general deficiency of other vegetables, have been readily disposed of, at an improved price. Grapes are now supplied freely; strawberries also plentifully; some peaches and nectarines, with a few cherries; but they are not at present in request. Pine-apples, although by no means plentiful, are not much enquired after. Of apples, we have, as yet, quite as many as are wanted; the demand for them being materially affected by the large supply of rhubarb, which, at this season, generally supersedes the use of them. Oranges are now very plentiful, and of excellent quality: the prices, throughout the season, have been good, and realised to the importers a handsome remuneration. — *C. G. M. May* 23. 1837.

	From £	s.	d.	To £	s.	d.
The Cabbage Tribe.						
Cabbage, per dozen:						
White	0	1	0	0	2	0
Cabbage Plants, or Coleworts, per dozen	0	4	0	0	6	0
Broccoli, per bunch:						
White	0	2	0	0	2	6
Purple	0	1	6	0	2	0
Legumes.						
Peas, per half sieve	3	0	0	0	0	0
forced, per punnet of three quarts	1	0	0	0	0	0
Kidneybeans (forced), per hun.	0	1	6	0	2	6
Tubers and Roots.						
Potatoes — per ton	6	10	0	7	0	0
Potatoes — per cwt.	0	6	6	0	7	0
Potatoes — per bushel	0	3	6	0	4	0
Kidney, per bushel	0	3	6	0	4	0
Scotch, per bushel	0	3	6	0	4	0
New, per pound	0	1	6	0	3	0
Turnips, White, per bunch	0	1	6	0	0	0
Carrots, per bunch:						
Old	0	0	4	0	0	6
Horn	0	0	9	0	1	0
Red Beet, per dozen	0	1	0	0	1	6
Skirret, per bunch	0	1	6	0	0	0
Scorzonera, per bundle	0	1	0	0	0	0
Salsify, per bunch	0	1	0	0	0	0
Horseradish, per bundle	0	2	0	0	4	6
Radishes:						
Red, per dozen hands (24 to 30 each)	0	0	9	0	1	0
White turnip, per bunch	0	0	1	0	0	1½
The Spinach Tribe.						
Spinach — per sieve	0	1	6	0	2	6
Spinach — per half sieve	0	0	6	0	1	0
Sorrel, per half sieve	0	1	6	0	0	0
The Onion Tribe.						
Onions, old, per bushel	0	7	0	0	8	0
Green (Ciboules), per bunch	0	0	5	0	0	6
Leeks, per dozen bunches	0	0	9	0	1	0
Garlic, per pound	0	0	8	0	1	0
Shallots, per pound	0	0	0	0	2	0
Asparaginous Plants, Salads, &c.						
Asparagus, per hundred:						
Large	0	4	0	0	8	0
Middling	0	2	6	0	3	6
Small	0	1	6	0	2	0
Sea-kale, per punnet	0	1	6	0	2	0
Lettuce, per score:						
Coss	0	1	0	0	3	6
Cabbage	0	0	6	0	1	0
Celery, per bundle (12 to 15)	0	0	10	0	1	3
Small Salads, per punnet	0	0	2	0	0	3
Watercress, per dozen small bunches	0	0	6	0	0	7
Pot and Sweet Herbs.						
Parsley, per half sieve	0	1	6	0	2	0
Tarragon, dried, per doz. bun.	0	3	0	0	4	0
Fennel, per dozen bunches	0	2	0	0	0	0
Thyme, per dozen bunches	0	5	0	0	6	0
Sage, per dozen bunches	0	3	0	0	0	0
Mint, per doz. bunches	0	2	0	0	3	0
Marjoram, per doz. bun.	0	6	0	0	0	0
Savory, dried, per doz. bun.	0	1	0	0	0	0
Basil, per dozen bunches:						
Dried	0	1	6	0	0	0
Green	0	8	0	0	0	0
Lavender, dried, per dozen bunches	0	3	0	0	0	0
Stalks and Fruits for Tarts, Pickling, &c.						
Rhubarb Stalks, per bundle	0	0	4	0	0	8
Edible Fungi and Fuci.						
Mushrooms, per pottle	0	1	6	0	2	6
Morels, per pound	0	16	0	0	0	0
Truffles, per pound:						
English	0	14	0	0	0	0
Foreign	0	16	0	0	0	0
Fruits.						
Apples, Dessert, per ½ sieve:						
Reinettes grises	0	8	0	0	12	0
Nonpareils	1	0	0	1	10	0
Baking, per bushel	0	6	0	0	12	0
Pears, Dessert, per dozen:						
Bon Chrétien	0	6	0	0	0	0
Peaches, per dozen	1	10	0	0	0	0
Nectarines, per dozen	1	10	0	0	0	0
Almonds, per peck	0	7	0	0	0	0
Cherries, per pound	1	5	0	0	0	0
Gooseberries, per pottle	0	1	6	0	2	6
Strawberries, forced, per oz.	0	0	8	0	1	0
Pine-apples, per pound	0	10	0	0	15	0
Grapes, hot-house, per pound	0	5	0	0	10	0
Cucumbers, frame, per brace	0	1	0	0	3	0
Oranges — per dozen	0	0	9	0	2	6
Oranges — per hundred	0	4	0	0	16	0
Bitter, per hundred	0	12	0	1	4	0
Lemons — per dozen	0	0	9	0	2	0
Lemons — per hundred	0	5	0	0	14	0
Sweet Almonds, per pound	0	2	6	0	0	0
Nuts, per bushel:						
Brazil	0	16	0	0	0	0
Spanish	0	18	0	0	0	0
Barcelona	1	0	0	0	0	0

THE

GARDENER'S MAGAZINE,

JULY, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 5. WHEAT FLIES.

"BREAD is the staff of life." The history of several minute creatures, which are destructive to the plants from which it is produced, chiefly during the period of their growth, will not be deemed less interesting than that of insects which infest other, less important, articles of cultivation.

About the middle of last April, I received from my friend W. Raddon, Esq., the celebrated engraver, several specimens of a little dipterous insect, in the winged state, which had been found in great profusion amongst the wheat, whilst removing it from the rick in which it had stood through the winter. These flies were in company with a lepidopterous caterpillar, which was also in great numbers; and the grains of wheat had been much eaten: it was, however, impossible to settle the amount of damage done by each of these tribes of insects. But the fact of these flies being found, in the early spring months, amongst the wheat in the rick, is, as we shall see in the sequel, an important point gained with respect to what had been already known respecting the habits of these flies.

Order, Díptera *Linnæus.* (Two-winged flies.)
Family, *Mú*scidæ *Leach.* (Corresponding nearly with the Linnæan genus *Mú*sca.)
Genus, Chlòrops. (A name imposed by Meigen, from the Greek words *chlōros*, green, and *ops*, an eye; because some of the species, when alive, have green eyes.)
Species, Chlòrops glàbra *Meigen, Macquart Hist. Nat., Dipt.*, vol. ii. p. 595. *Fig.* 101. *a.*, the insect much magnified; the cross lines beneath indicating the natural size.

Head golden yellow, shining; face paler; antennæ yellow; seta brown?; eyes dark brown; a large triangular black patch between the eyes, in the middle of which the ocelli are placed; hind part

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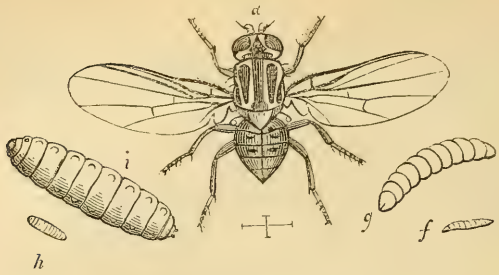

of the head black. Thorax yellow, shining, with a broad central black line, becoming rather indistinct towards the scutellum; 2 elongated wedge-shaped marks on each side, with a still smaller and narrower lateral line extending to the base of the wings: a few scattered bristles are to be seen at the sides of the thorax. Scutellum pale yellow, the base sometimes rather more obscure. Mesosternum with 2 large and 2 small lateral black spots. Metathorax dark-coloured. Halteres white. Wings colourless, and beautifully iridescent with pink, green, blue, and yellow reflections. Abdomen small, dark pitchy brown, pale yellowish at the base, the apex being also pale. Legs fulvous; femora not thickened; tarsi rather more obscurely coloured at the tips. Length one tenth of an inch; expansion of the wings nearly one fourth of an inch. I have been thus particular in describing Mr. Raddon's insect, as there are several other species which appear to be very nearly allied to it, and to possesss similar habits.

Of these, the most destructive hitherto noticed is the *Músca* pumiliònis of Bjercander, described in the *Transactions of the Royal Academy of Sweden* for 1778 (p. 3. No. 11., and p. 4. No. 4.). This species is of a black colour, the under side of the head, and 2 lines on the thorax, being yellow; the halteres are white, and the legs ash-coloured, with black tips.* The larva is a white fleshy grub, one sixth of an inch long, with the head pointed at the end, with a black tip, and resembling a V. It resides in the young shoots of rye, in the month of May, at the lowermost joint, which stops the growth of these shoots, making them appear as dwarfs, seldom attaining above 1 in. or 2 in. in height; whence the specific name pumiliònis (*pumilio*, a dwarf). The pupa is yellow, shining, rather more than one twelfth of an inch long, and composed of rings; the flies appearing the 12th of June and following days. At what time the eggs are deposited in the rye is not ascertained: the larvæ were small on the 23d of April, and full grown on the 25th of May. On the sides of the

* "M. nìgra, subtus capite, thoracisque duabus lineis, flavis; halteribus albis; pedibus cinereis, apice nigris."

stems were seen no holes; whence Bjercander conjectured that the eggs, or larvæ, must enter at the top of the leaves. The fly, when hatched, forces its way upwards, and flies out of its former abode.

The dwarf stems were observed to grow yellow, and decay, on the 14th of June; and were in such abundance, that, in some fields, 8, 12, or 14, were found in a square of 2 ft.; from which the writer concludes that great injury is done to the rye, and strongly recommends that the stems should be pulled up and burned whilst the insect is in either the larva or pupa state; by which means, he thinks, one or two persons might destroy many thousands of them in a day; he himself having picked up 350 stems in as few hours.

Soon after this memoir was published, Mr. Markwick read a memoir before the Linnæan Society, upon the habits of a fly supposed to be identical with the *Músca pumiliònis*, which, in the course of the spring of 1791, had been observed in the neighbourhood of Battle, where, in the early part of the spring, some fields of wheat appeared to be much blighted; the injury being caused by a small grub, lodged in the centre, or very heart, of the stem, just above the root. At the end of March, the insect was generally in the larva state; but in some it was already changed to a chrysalis. This memoir was published in vol. ii. of the *Transactions of the Linnæan Society*, accompanied by a plate,

from which our *figs.* 102. *b c*, 103., and 101. *f g*, are copied. *Fig.* 102. *b* represents a young wheat plant, with the centre

stem withered; the pupa (*c*) being seen in the centre of the stem; at *d*, two of the flies are shown, which are drawn considerably smaller than in the original figure. *Fig.* 103. is the same fly magnified; and in *fig.* 101. *f* and *g* show the larva; *f*, the natural size; and *g*, magnified.

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Mr. Markwick planted some of the diseased roots *under a hand-glass*, where they flourished very much, and threw out strong shoots on each side; the middle shoot withering. On pulling it up subsequently, an empty chrysalis was found in each stem. On the 14th of May, several flies were produced from some other plants, which had been enclosed in gauze; 6 plants producing 6 flies. After the larva had changed to a pupa, the mischief ceased; the root not being so materially injured as to prevent its throwing out fresh lateral shoots, or stocking itself, as the farmers term it. In short, Mr. Markwick adds, "At harvest time, I was most agreeably surprised to find a good crop of wheat, and the ears large and fine, throughout the whole field." It was considered the best crop on his farm; and he supposed it would yield about three quarters and a half of threshed corn from each acre. It was erroneously suggested, that this might possibly be the American Hessian fly (Cecidomỳia destrúctor *Say:* see *Magazine of Natural History*, vol. i. p. 228.); but, if even this had been the case, Mr. Markwick observes that a little good English husbandry, by keeping the ground in heart, and thus enabling the wounded shoots to repair themselves by strong lateral ones, would prevent our being alarmed to a great degree. He adds various conjectures relative to the introduction of the eggs into the field; considering it improbable that it was by means of the manure, which consisted entirely of lime. It was only the wheat which was sown early (about the end of September or beginning of October) that was attacked; which, it was conjectured, was caused by the cold, at the approach of winter, destroying the fly before the late-sown wheat had sprung out of the ground. In one field, where a part of it was sown with white, and the other with red, wheat, at the same time, the white wheat was much affected, and the red but very little. A figure of the under side of the insect (which, from the figures, appears to be twice as large as Mr. Raddon's) is added; from which it seems that the under side of the body is pale, with two large black spots on the mesosternum. In No. 91 of the *Annals of Agriculture*, the history of the same fly is given by the late Arthur Young, accompanied by notes from Sir Joseph Banks, who determined it to be identical with the *M*úsca pumiliònis.

Mr. Marsham also published some additional observations

upon the same insect, in the volume of the *Linnæan Transactions* above referred to, in which he conjectures that, as the fly is bred so early as May, and the early-sown wheat does not spring up until some time after the end of September, there must be an intermediate brood of these flies * ; and, with a view to ascertain this point, he offered the following hints for observation : — " When it appears evident that a fly has attacked a field of wheat, rye, &c., watch carefully the animal through all its stages, but more especially when the fly takes wing; observing on what plant it settles, and whether it is partial to any particular plant; and, if this can be determined with precision, attend to see it deposit its eggs, carefully examining whether it lays more than one at a time. If, afterwards, the larvæ appear on those plants, observe in what manner they feed ; continuing the remarks till the perfect insect appears ; when it must again be watched with attention, and traced to its next place of depositing its eggs, to determine whether wheat or rye be its natural food in spring, or whether these plants be only in particular seasons, when its own natural food may have failed ; for Mr. Markwick takes notice that it was only the early-sown wheat that was affected." He likewise suggests, that, as it appears from Mr. Markwick's experiments, that the wheat throws out lateral shoots, it is not advisable to adopt Bjercander's advice of picking out and burning the stems; but that pinching the centre leaves just above the crown of the root, where the insect is usually found, may, perhaps, effectually destroy it, and leave the plant in a state to throw out its side shoots.

Fallen, the celebrated entomologist of Sweden, in his work upon the Díptera of that country, has described the *Músca* pumiliònis, under the genus O'scinis, as being of common occurrence in the months of June and July, with the observation : — " The larva of this fly resides within the stems of wheat, which it destroys, and is described by Bjercander. The description of the perfect insect, however, agrees equally well with O. lineàta *Fabricius*, and O. pumiliònis ; no description being given of the position of the nerves of the wings. It is, indeed, most probable, that the larvæ of both species inhabit the same situations. The length of one line, which Bjercander attributes to the latter species, agrees with the insect here described; which I therefore consider as identical with O. pumiliònis. A specimen, however, reared from a larva found in a stem of wheat, transmitted by Bjercander himself to Professor Lidbeck, is entirely black, and belongs not to this species, but is O'scinis frít of Linnæus; whence it is

* Mr. Marsham observes that they are not uncommon, as he frequently found them, in autumn, on umbelliferous plants. It is much more common to observe them in great numbers in our apartments; during the autumn of 1834, they literally swarmed in the houses in the immediate neighbourhood of the metropolis. The white ceilings of rooms appeared quite discoloured by their numbers.

probable that Bjercander had described the habits of several distinct insects, illustrating them only by the description of a single species." That this, most probably, is the case, appears from a very interesting memoir by Olivier, which seems to have been unknown to all subsequent dipterologists, in which eight distinct species are described which attack the Cereàlia; one of which is the O'scinis pumiliònis of Fabricius, or the Chlòrops pumiliònis of Meigen and Stephens, and is stated by this author to have been found in all the different kinds of rye and barley, which it seems to attack in preference to the wheat, although occasionally found in the latter. I have also received from D. Sharpe, Esq., F.L.S., &c., a fly twice the size of those from Mr. Raddon, which he reared from wheat in Huntingdonshire, that was attacked, when 6 in. or 8 in. out of the ground, by the larva, which devoured the centre of the stem, and so killed the plants. It is not shining, like the Chlòrops glàbra described above; and the yellow marks on the thorax are less conspicuous: the tips of the femora, as well as the tibiæ and tarsi, are brown: the nerves of the wings are arranged as in Chlòrops glàbra. The pupa from which this fly was produced is represented above, in *fig.* 101. *h i*, of the natural size, and magnified: it is of a shining pale yellowish buff colour.

ART. II. *Farther Information respecting the Coleopterous Insect Otiorhýnchus sulcàtus, and its Ravages on the Vine.* By W. LINWOOD, F.H.S., &c.; with some Remarks from J. O. WESTWOOD, F.L.S.

THE following letter, received from W. Linwood, Esq., of Enfield, gives us further information relative to the habits of the Otiorhýnchus sulcàtus, an insect whose destructive powers seem far more general than had been imagined. I am happy that the information thus received from different correspondents (see, also, p. 286.) will enable us to arrive at something like a knowledge of the economy of the insect in question. Persons, also, who may possess information upon any other of the insects included in my series, will render good service to cultivators by coming forward, as Messrs. Castles, Linwood, and J. B. W., have done, and communicating the result of their observations to you.

" *To J. O. Westwood, Esq.*

" SIR, I beg leave to send you a memorandum, written on reading your article in the *Gardener's Magazine*, p. 157., for April last, which may throw some further light on an insect carrying on its operations chiefly in the dark.

" It is with much pleasure I at last see the description of an insect which has annoyed me, more or less, for the last thirty

years, and of which I have enquired of gardeners and others, without learning any thing material relating to it.

" In a green-house, attached to my residence at Hackney, in the year 1809, I planted forty-four vines, of various descriptions, inside the house. They grew vigorously the first year, and produced famous shoots, and they were pruned in the autumn of the same year; looking, as I did, in the spring of 1810, for a tolerable crop of fruit: the buds of the vines began to swell, but scarcely produced a shoot, and those only of the weakest description. Concluding that something was wrong at the roots, I examined one, and found that the roots had been completely eaten off by an insect resembling fig. 67. A, in p. 158. of your communication, in very large quantities; some of them were similar to fig. 67. D, in p. 158., and a short time after some appeared on the vines similar to fig. 67. G, in their perfect state; appearing first, when young and at coming out of the ground, of a pale ash colour, and afterwards becoming darker, and nearly black.

" About eighteen years since I came to my present residence, and have been constantly annoyed by the same insect, to a greater or less extent. If I find my vines drooping, either in the border or in pots, I invariably find the grub, fig. 67. D, above referred to, at the roots. The grubs come out of the ground in May, and then feed on the tendrils, or footstalks, of the leaves, or the extreme ends of the shoots of the vine. They are scarcely ever found in the day, but are very active after dark, always disappearing before daybreak.

" I have been in constant consultation with my gardener, an able man, who has been with me many years, respecting this insect, but we can hit on no method of destroying it. We have found it in abundance in the root of the *Cyclamen persicum*; and we have lately lost a fine plant of the *Adiantum pedatum*, in consequence of its ravages. I now and then find a straggler on the vines on the walls, and on other trees; and, occasionally, we find many of the old roots of the strawberry destroyed by the same insect.

" I should observe that it seldom does much damage to vines after the first or second year; and that it confines itself mostly to the young vines newly planted, or to vines in pots. My gardener has never found it on the roots of succulent plants.

" I send you some of the insects in a tin box; also some of another description, which I constantly find on the vines; but these last do not appear to do any mischief.

" If you could point out any mode of destroying them, you would be doing a favour to,

" Sir, your very obedient servant,

" Wm. Linwood.

" *Enfield, June* 8. 1837."

It will be seen that Mr. Linwood's communication furnishes a reply to my query, in p. 287., relative to the place of abode of the larvæ of the perfect individuals which attack the vines and other wall trees. It will, also, be seen, that J. B. W.'s note is partially at variance with the observations of Mr. Linwood; viz., that the insect seldom does much damage to the vines after the first or second year. In case of the attacks of the Otiorhýnchi upon the vines or peaches, it would, I should think, be serviceable not only to water the roots known or suspected to be infested with the larvæ, with tobacco water or infusion of quassia, or some such bitter fluid, but also occasionally to lay bare the roots to a short distance, and examine if the insect is present. This can, of course, be done with much greater facility with vines than with succulent plants; although I see no great difficulty even with the latter.

The other insects sent by Mr. Linwood were specimens of one of the species of Elatéridæ; the larvæ of which are very injurious to cultivators, and are known under the name of wire worms. These will form the subject of an early article in my series.

I am, &c.,

June 12. 1837. J. O. Westwood.

Art. III. *Remarks on Tile-Draining, and on certain Benefits which might result from the Use of Draining Tiles in supplying Air to the Subsoil.* By Robert Arthur, Gardener at Wall Tower Gardens, North Berwick.

Draining by means of tiles may justly be reckoned one of the greatest improvements in modern agriculture; nor are all the purposes to which tile-draining may be applied, as yet fully ascertained.

Without going into detail as to the amelioration of the soil, &c., by tile drains, I would merely suggest that it has occurred to me, that the tunnels formed by drain-tiles might be employed for at least one purpose besides drying the soil, I mean the introduction of large quantities of atmospheric air into the earth, which might be a means of saving manure and increasing the fertility of the soil. Should the idea now thrown out be deemed worthy of consideration, I think I could point out a method by which the confined air could be withdrawn from these tunnels, and large quantities of atmospheric air forced in, which would find its way towards the surface. One objection to tile-draining is the great outlay of capital it occasions: this there is every reason to hope is in a fair way of being greatly reduced. The Marquess of Tweeddale has succeeded in constructing a machine which, from the facility and expedition with which it forms the most beautiful and substantial bricks and tiles, cannot fail to re-

duce the prime cost of these articles very considerably. Without any pretensions to give an accurate description of this machine, which could not be done without drawings, it may suffice to say that the clay is conveyed from the pug-mill to the machine, where, by passing between cylinders and moving over moulds, a tile of perfect consistency and proper dimensions is formed, and conveyed along to the drying shed, without the intervention of manual labour. Several of these machines are now in full operation; and, with the attendance of one man and two boys, 10,000 tiles are easily formed and placed in the drying sheds in one day. If the duty were reduced on large-sized bricks it would add much to the cheapness, strength, and beauty of brick building generally. How easy would it be to form excellent coping for garden walls, edgings for gravel walks, movable walls for the protection of early potatoes, peas, &c., and paving for fruit-tree borders, and for training fruit-trees near the surface of the ground.

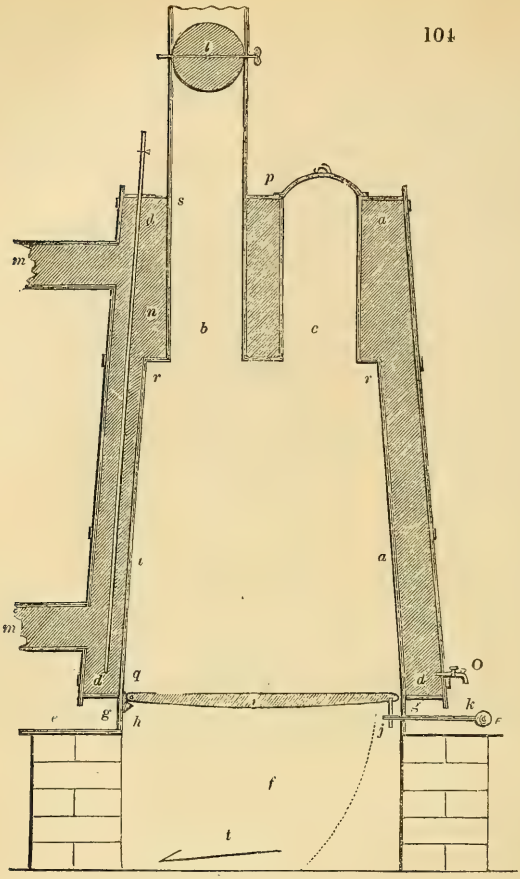
East Lothian, May 26. 1837.

ART. IV. *Description of Hogg's Patent conical Boiler, for heating Hot-houses, and other Buildings, by hot Water.* By JAMES HOGG, New York, United States.

I FORWARD to you two sketches of a boiler invented by my brother, now residing in New York, who is but eighteen years of age, and who, as I was coming on a visit to this country, desired me to give you a description of it, for insertion in the *Gardener's Magazine.*

The boiler is intended for burning anthracite coal (which is now most generally used in the United States) or coke. Anthracite coal gives out a most intense heat, but it is not diffusive enough in a flue, as it has no smoke, and very little flame; and, consequently, owing to the severity of the American winters, we are obliged to use great quantities of it, which causes much wear and tear of the furnaces, which generally want repairing every season, and resetting at least every two years. To obviate this expense, and to do away with the trouble of attending flues, my brother, from a hint given him by my father, invented the boiler above described. Its principal merit is, that there is very little loss of heat, nearly all of it being absorbed by the water which passes round the pipes and furnace. The outside, being of strong oak staves, is much cheaper than iron, and nearly as durable; and there is no leakage, warping, or danger from fire, as the furnace is raised, by means of the ring, at least two inches above the iron plate.

Fig. 104. is a section of the boiler, which consists of a conical iron furnace *a a*, with the two pipes *b* and *c*, and the flanges *d d*,



cast in one piece, to which the outside boiler, made of wooden staves, is fitted, and well bound with iron hoops. The whole stands on a square iron plate (*e e*), supported by the brickwork of the ashpit (*f*); and, from the top of this plate, the ring *g g* rises and fits into a bead on the bottom of the furnace. In this ring there are two pins; the one is shown at *h* on which the grate turns, and at *j* there is a hole through which the other pin (*k*) passes, and supports the grate.

The fuel is put in at the top of the pipe *c*, and receives air from the front of the ashpit, which has a register door, as shown by the elevation (*fig.* 105.); the draught passing up the pipe *b* (*fig.* 104.), in which there is a damper (*l*). The two water-pipes (*m m*) are fastened on either by bolts or screws, and they can be made to lead from the boiler either horizontally, or perpendicularly; as shown by the elevation *fig.* 105. *n* is an expansion

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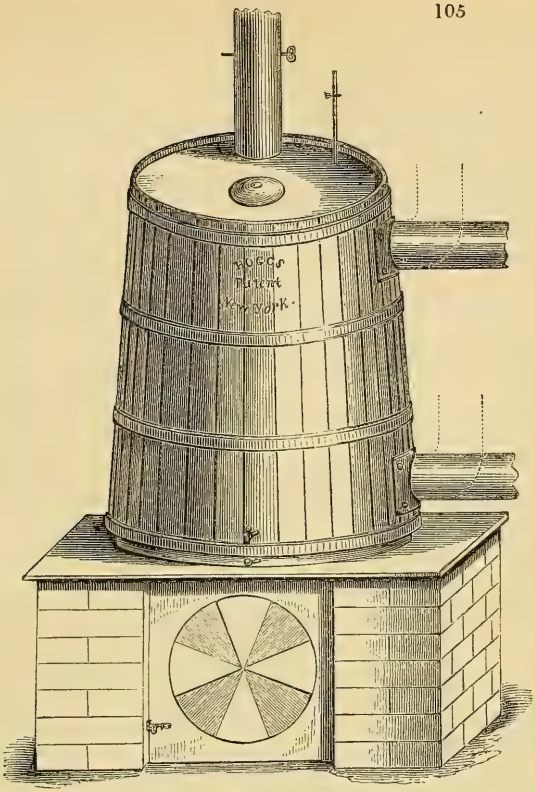


feeding-pipe with a stop-cock; *o* is a stop-cock for drawing off the water from the boiler when it is not in use; *p* is a lid which fits on to the fuel pipe (*c*.) The dimensions are as follows: — The height of the furnace from *g* to *r* is 18 in. The height of the pipes *c* and *d*, from *r* to *s*, is 9 in. The diameter of the pipes *c* and *d* is 4 in. The diameter of the furnace, at the bottom, is 14 in.; and at the top 12 in. The upper flange is 5 in. wider; and the lower flange is 2 in. wider. The staves are 2 ft. 6 in. high.

There is very little heat lost in the pipes *b* and *c*, for the water absorbs it so fast, that a person may hold his hand on them without feeling the least inconvenience. The boiler can be used hermetically sealed, by closing the pipe *n*; but this should not be done unless the outside is extra-hooped.

When the fire is put out, the ashes are removed by pulling out the pin *k*, when the grate falls down and empties itself into the ashpit. The grate is easily replaced by opening the door, raising it up, and replacing the pin. The poker used for this

description of fuel is of the form shown at *t* in *fig.* 104.; and it is employed for raking the fire through the bars underneath, as anthracite coal goes out if stirred in the usual way.

Since the month of September 1835, my brother has erected nine or ten of these boilers in New York and its neighbourhood, and my father writes to me stating that they give general satisfaction. The price of the boiler is 35 dollars, or 8*l.*

London, February 18. 1836.

ART. V. *A neat and convenient Tally for ornamental Plants in Borders.* By CHARLES LAWRENCE, F.H.S., &c.

I HAVE frequently seen communications in the *Gardener's Magazine*, on the subjects of tallies for plants and fences for trees; and, though these may not seem very important objects, they are of such daily use to those who have many plants to name, and trees to protect, that I wish to afford my brother gardeners the result of my experience on them.

With respect to tallies, I have tried a very great variety which have been recommended by others, and I have found objections to them all. I resolved, at last, to have some made of china, not glazed; and was pleased with their clean and neat appearance. I mark them with black paint, reduced with sweet oil to the consistency of cream, so as just to flow slowly through a common pen. With this a hundred tallies may be marked, in the neatest manner, in two hours, with ease. I found these, after they had been out a year, just as white, and the lettering as perfect, as when they were first put in the ground. Some marked with paint reduced with spirits of turpentine were nearly obliterated. I send you three specimens marked, for the inspection of any one who may wish to see them. The largest size is for plants or shrubs lying at a distance from the walks; and the small size for border plants, or large pots; but there is a still smaller size for ordinary pots. The tally without a stem is used to hang on standard plants (roses, for instance), and is suspended by malleable wire. When the tallies are no longer wanted for the particular plants for which they were marked, they are laid aside until a large number is accumulated. We then put a pound of pearl ashes into an earthen vessel, and pour on them two or three quarts of boiling water. The tallies are placed in this for an hour, and then put to dry. The lettering is thereby completely effaced, and the tally is restored to the same condition as when first made. They are obtained from Worcester; and I purchase them retail, at one shilling a dozen, taking one sort with another. They could be procured, in large quantities, probably at one third less cost. They are not suitable for nursery purposes, except in ornamental

grounds; as the stems are, of course, brittle, and require care in raking the borders. In other respects, they are perfectly durable, in all weathers, never alter in appearance, and nothing can be more neat.

If any of your readers can suggest any composition for marking of greater fluidity, which would be permanent on exposure to weather, and which could be effaced at pleasure, I think this kind of tally, for ornamental gardens, would be perfect.

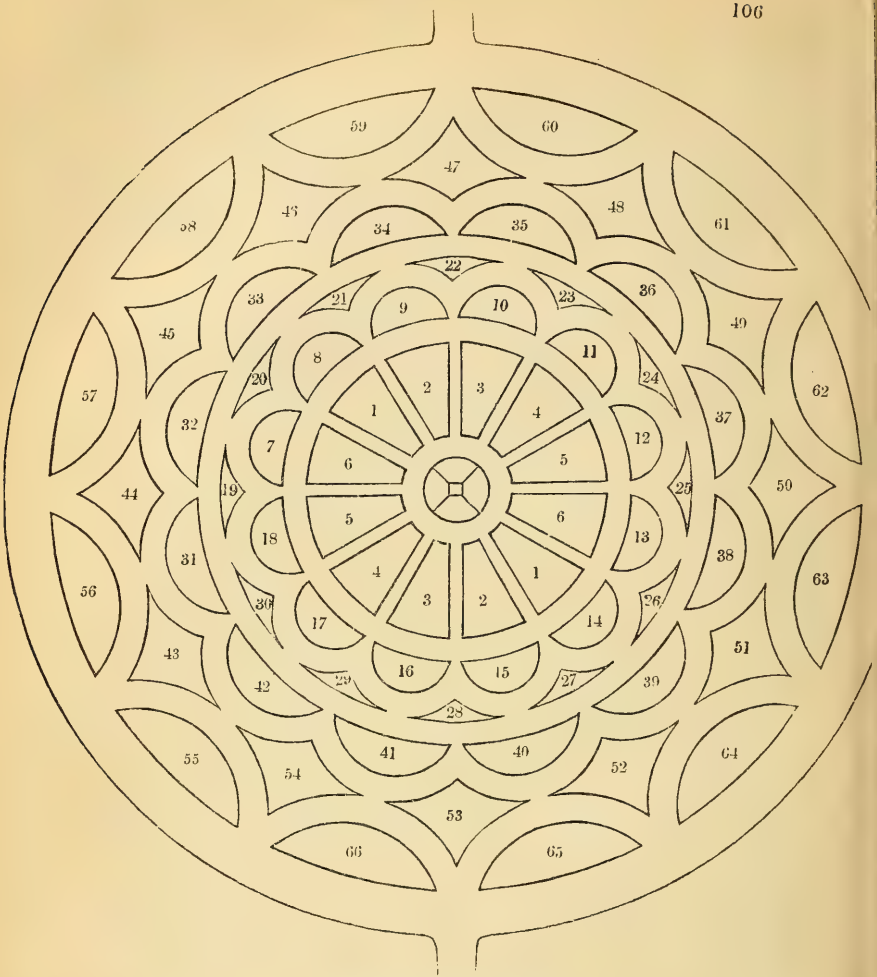
The Querns, March, 1837.

ART. VI. *On a proper Arrangement of Plants, both as to their Height and the Colour of their Flowers, being indispensably necessary in a Flower-Garden.* By JOHN CAIE, Gardener to Her Grace the Duchess of Bedford, at Cambden Hill.

(Read at a Meeting of the West London Gardeners' Association, April 10.)

IN the arrangement of plants, as in every thing else, the knowledge attained will be just in proportion to the extent to which the mind has been exercised in the research after facts bearing on the subject. Admitting this to be correct, it follows that our ideas should be greatly expanded and diversified, before we can produce the effects most desirable in flower-gardens, namely, harmony and variety; without which the plants will appear quite as irregular to the cultivated eye, as they were previously to their being removed from their natural situations. As long as gardeners acted without having any fixed principles to guide them, it is no wonder that individuals, ignorant of the art of gardening, succeeded as well in making flower-gardens as those who were then called practical men: but the day is gone by when such general inattention could be displayed on the part of gardeners; and they are now expected, not only to understand the practice, but something of the science, of their art.

Keeping these observations in view, let us now turn our attention to some of the methods practised in effecting improvements in flower-gardens. A strict attention to the various soils in which the plants are naturally produced, in the several parts of the world from which they were originally brought, is indispensably necessary, in order to insure their healthy appearance and perfect flowering; as, without this, it will be impossible to effect diversity in the height, and in the colour of the flowers of the plants, and in the duration of their flowering. A want of this attention is often the cause of plants being termed not adapted for such purposes, when they are, in fact, exactly suitable for them. Much will depend on the height and proportionate space occupied by plants in the arrangement, so as to produce these effects, either on a flat or an undulating surface;



Explanation of References.

1. Nierembérg*ia* calycìna, white.
2. Lobèl*ia* grácilis, blue.
3. *V*erbèna Sabìn*i*, purple.
4. Lobèl*ia* lùtea, yellow.
5. *A*nagállis Monélli, blue.
6. *V*erbèna *c*hamædrifòlia, scarlet.
7. *A*nagállis Monélli, blue.
8. Lobèl*ia* lùtea, yellow.
9. *V*erbèna *c*hamædrifòlia, scarlet.
10. Nierembérg*ia* grácilis, whitish.
11. Lobèl*ia* unidentàta, dark purple.
12. Lobèl*ia* lùtea, yellow.
13. Campánula gargánica, light blue.
14. *A*nagállis grandiflòra, scarlet.
15. Lobèl*ia* unidentàta, dark purple.
16. *L*òtus microphýlla, yellow.
17. *A*nagállis grandiflòra, scarlet.
18. Nierembérg*ia* grácilis, whitish.
19. *Petùnia* intermèdia, dark purple.
20. Alonsò*a* lineàris, scarlet.
21. Lantàna Sellòw*ii*, purple.
22. Isótoma axillàris, blue.
23. Sanvitàl*ia* procúmbens, yellow.
24. *V*erbèna multífida, lilac.
25. Alonsò*a* lineàris, scarlet.
26. *Œ*nothèra *t*araxacifòlia, white.
27. Nemóphila insígnis, blue.
28. *A*'ster tenélla, lilac.

in order that they may harmonise with the scenery in the immediate neighbourhood of which they are placed. While alluding to the distribution of plants, it may not be out of place to state that a proper arrangement of the figures described on such surfaces, will tend to enhance the beauty of the scenery. Let a square figure be divided into four triangles of equal dimensions, and each set apart for a distinct plant or plants of the same colour, and let the height of the plants be in proportion to the size of the given triangle, which will show what is meant by unity of idea; at the same time, the greatest diversity may be produced by a strict attention being paid to the colours of the flowers so grouped; especially when so arranged, that the brilliancy of the one will tend to show the beauties of the others.

When this judgment of the sight is properly exercised, the most comprehensive ideas may be formed; not only in the arrangement of plants, and the colours of their flowers, but of the distance at which they should be placed; not only for the figures generally called regular, but also for irregular figures, at apparently irregular distances; but which should be so arranged, in proportion to the space of ground which they are to occupy, that no apparent confusion, or disproportion in their arrangement, may exist. By the introduction of such groups of flowers as will appear distinct in themselves, the scenery will be much improved; especially if diversity of colour be attended to, and particularly so where many evergreens abound; as it is when placed in immediate connexion with these, that brilliantly coloured flowering plants, as well as the evergreens, are seen to the greatest advantage. In order to show that those plants the

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29. *Petùnia* intermèdia, dark purple.
30. *Œ*nothèra macrocárpa, yellow.
31. Bouvárd*ia* triphýlla, scarlet.
32. *V*erbèna pulchélla, lilac.
33. Campánula carpática, blue.
34. Eschschóltz*ia* (Chrysèi*s* Lindl.) cròcea, orange.
35. *L*òtus jacobæ'us, dark brown.
36. Bouvárd*ia* triphýlla, scarlet.
37. Búchner*a* capénsis, white.
38. Eùtoca víscida, blue.
39. *Œ*nothèra macrocárpa, yellow.
40. Nierembérg*ia* filicaúlis, whitish.
41. Frogmore scarlet pelargoniums.
42. *S*elàgo Gilliès*ii*, lilac.
43. *Petùnia* nyctaginiflòra, white.
44. Agathæ'a cæléstis, blue.
45. Eschschóltz*ia* (Chrysèi*s*) cròcea, orange.
46. *Petùnia* phœnícea, dark purple.
47. Bath scarlet pelargoniums, scarlet.
48. *S*enècio élegans var. plèno-rùber.
49. *V*erbèna Lambért*i*, purple.
50. Eschschóltz*ia* (Chrysèi*s*) califórnica, yellow.
51. *Petùnia* bícolor, white.
52. *L*ýchnis fúlgens, scarlet.
53. *V*erbèna venòsa, purple.
54. *L*òtus jacobæ'us var. lùteus, yellow.
55. *P*hlóx Drummónd*ii*, purple.
56. *L*ysimàchia verticillàta, yellow.
57. *Œ*nothèra speciòsa, white.
58. *S*álvia fúlgens, scarlet.
59. Lobèl*ia* syphilítica, light blue.
60. *L*ysimàchia quadriflòra, yellow.
61. *P*hlóx Drummónd*ii*, purple.
62. *Œ*nothèra speciòsa, white.
63. *S*álvia fúlgens, scarlet.
64. *A*sclèpia*s* tuberòsa, orange.
65. *S*álvia æ'nea, blue.
66. *S*álvia fúlgens, scarlet.
67. Flower border for plants not adapted for grouping.

duration of the flowers of which is such as to render them, individually, unfit for grouping, may produce a good effect in the flower-garden, when planted in connexion with others bearing an affinity to them in height and habit of growth, the three following perennial plants may be set apart for a distinct figure: *I*bèris sempervìrens, *C*ampánula glomeràta, and *L*ysimàchia verticillàta, each of which will occupy the whole space of the figure in succession, giving their respective colours of white, violet, and yellow, to the figure, at different seasons. Where the object is to produce a mass of flowers at the same season, as all plants are not equally profuse in flowering, it will be necessary to select those that are so; because, where groups of different-coloured flowers are placed so as to be in connexion with each other, in order to produce a kind of pattern, a deficiency in any one of these would destroy the effect. There are many plants profuse in flowers, and which flower at the same time, but which have such different habits of growth, as to render them, apparently, unfit for grouping together; but, with a little attention, by pegging them on the ground, and diverting their shoots for a while from the light, they may be brought to effect the object in view. There are plants the growth of which is so luxuriant as to preclude them from forming groups of colours, in consequence of the superabundance of their leaves; but even this may, in some cases, be obviated by planting them in very poor sandy or gravelly soil, as near the surface as possible, and giving them very little water, the results of which will be stunted plants, with a greater profusion of flowers.

The variety of plants adapted for ornamenting flower-gardens being very great, little difficulty will arise in making a proper selection, either as regards height, colour of flowers, time of flowering, or duration of flower. To effect the foregoing, at an early period of the season, say June or July, recourse must be had to sowing the seeds of some sorts the previous autumn; and cuttings of others should be struck at the same time, as they will be more stunted in growth when propagated at that season, and will come sooner into flower, with a greater profusion of blossom, than if they were plants just rooted previously to turning out into the flower-beds.

Fig. 106. shows a design for a flower-garden, of a regular pattern, which it is intended to plant with herbaceous plants; each bed to contain one species or variety, so as to produce a mass of one colour; and it is accompanied by a list of plants suitable for it, with the colours indicated after each. The lowest plants are placed in the centre, being such as are naturally of low growth, or will admit of being pegged down; and the tallest and strongest-growing plants are placed just within the outer rim.

Cambden Hill, May, 1837.

ART. VII. *On the Necessity of thinning the Berries on Bunches of Grapes as soon as the Fruit is set.* By JOHN FYFFE, Gardener at Milton Bryant, Woburn.

THE principal object, in the cultivation of the vine, is to have large bunches and large berries; and it is well known that both these depend on proper thinning: but the fruit is often allowed to stand too long before this operation is performed. When this is the case, the effect produced by the thinning is much less certain; as, by allowing what you cut out to swell, you deprive what remains of much strength from the vine. I would therefore recommend the following treatment, which I have practised with beneficial effect: — As soon as the berries are set, I go over the bunches, and cut out all the smallest berries, leaving the bunch regular, but so bare, that, at first sight, one would be apt to think the fruit was entirely destroyed. In a few days, however, the bunches appear quite different, as the berries which are allowed to remain swell much faster when thus treated, than if they had been allowed to remain till the usual time of thinning. When the largest berries are about the size of a large garden pea, I go over them again, tying up the shoulders, and leaving the berries all clear of each other, so as to allow a free circulation of air through the bunch. I also never allow more than two bunches on each spur; or, if the vines are trained by a succession of wood, not more than six on each bearing leader. By this treatment, and paying proper attention to the usual routine culture, I will venture to say that there are few situations in which vines may not be made to produce large grapes, if the borders be well made, and in good condition. The vines will be greatly benefited by being regularly watered with the drainings from the frames twice a week, when starting, and during the swelling of the fruit; and due care should be taken to have the borders covered with good rotten dung during the winter, never planting them with regular crops of vegetables, as is sometimes done; not only because you cannot dig the borders without injuring the roots of the vines, but because vegetables of any kind will exhaust the soil, and rob the vines of that nourishment which they require to enable them to swell off their fruit in perfection. I would therefore suggest, that the borders, in the summer, when the rough of the manure is either taken off, or very slightly pointed in, be neatly raked, and laid out into small beds for salads, such as mustard and cress, which can do no injury to the vines.

Milton Bryant, April 22. 1837.

ART. VIII. *On Part of the Vines, in the same Forcing-house, being suspended, and Part not.* By CHARLES PULLEN, Gardener to F. L. Goldsmid, Esq., Champion Hill.

I PROMISED, in a former communication (Vol. XII. p. 248.), to state the result of the experiment, in the same forcing-house, of vines part suspended, and part not. The vines operated on are of six different kinds, and these ten plants in the house; five of which were suspended, viz. one White Frontignan, two Tottenham Park Muscat, one Black Hamburgh, and one Grizzly Frontignan; and five were not suspended, but trained in the usual way; viz. one White Sweet-water, one Black Hamburgh, two Muscat of Alexandria, and one Grizzly Frontignan; so that the divisions are nearly equal in sorts. In reference to the memoranda I kept to ascertain the progress the vines made in each division, the result appears to be in favour of those suspended; these vines being between two and three weeks earlier than the others, and more abundant in produce.

Suspended Vines.

April 25. Black Hamburgh began to colour.
White Frontignan, ditto.
27. Tottenham Park Muscat, ditto.
May 9. White Frontignan, grapes ripe.
12. Black Hamburgh, several bunches ripe.
19. Cut Black Hamburgh and White Frontignan grapes.
25. Tottenham Park Muscat, grapes ripe.

Vines not suspended.

May 2. White Sweet-water began to colour.
5. Black Hamburgh, ditto.
7. Muscat of Alexandria, ditto.
25. White Sweet-water grapes ripe.
June 8. Black Hamburgh, ditto.
18. Muscat of Alexandria, ditto.

All the grapes, when served at table, were esteemed excellent in flavour.

Champion Hill, Camberwell, Oct. 19. 1836.

ART. IX. *On a new Method of grafting Vines.* By WILLIAM SMITH, Gardener at the Priory, St. Andrew's, Fifeshire.

FOR several years past, I have made repeated attempts to engraft vines by every method that I had either seen or read of, as being practised by others; and as often I have been disappointed in the result of the operation. My object was to obtain good kinds of grapes in the shortest possible time, as well as to ascertain, by engrafting white kinds on black, and *vice versâ*, what effect the stock has upon the scion when the fruit comes to maturity.

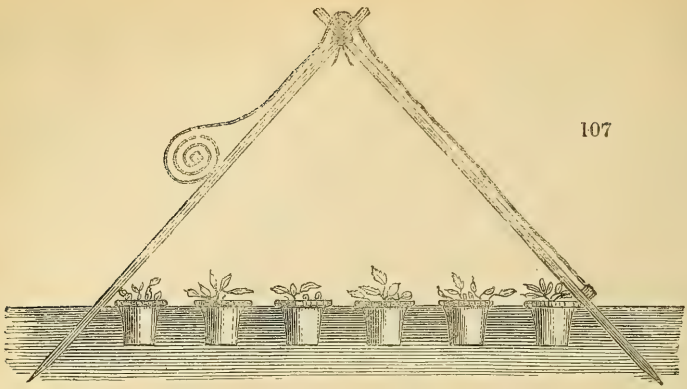
In 1834, being rather chagrined to find, after all my trouble, that I was not likely to succeed, I determined, as a last resource, to try a method which I had neither seen nor heard of being

performed by any other person; and, from its extreme simplicity, I took good care not to mention it to any body until I had proved its effects. In the month of May of the above year, I carelessly cut a scion from a vine which was growing in the open air, and which was just beginning to vegetate, and as carelessly grafted it on a vine in the hot-house which was just bursting into leaf. It bled for a day or two, and then, to my great astonishment, began to grow as fast and as well as the other vines in the house. Elated with my success, I determined to put this method of grafting in execution on all the vines I wished to change the following season. So, accordingly, in the month of March of last year, I procured nine kinds of grape vines, from a late hot-house, just beginning to show signs of vegetation. These I engrafted on vines in a hot-house which had been forced from the 1st of February, in the above simple manner, which I will now describe to you more in detail. I take a shoot of last year for a stock, and, having rubbed off the young green wood of the present season, I cut it through exactly in the centre of the collet, or internodium, making a longitudinal cut of about an inch in length, and taking care not to ruffle the medulla, or pith. I then select a scion of nearly the same circumference as the stock, and I prepare it in the same manner; making the two join as exactly as if they were one undivided vine. They are then tied very firmly together with a waxed piece of twine, and waxed over when tied, and then clayed as in common grafting, with a covering of moss over all, which is frequently moistened till the shoot has grown a foot or two in length. This finishes the operation; nothing more being necessary but to cut off the twine in the autumn. All of the above-mentioned nine vines grew remarkably strong; more particularly the following kinds, on the Black Hamburgh as the stock: — Grizzly Frontignan, Black Damascus, White Syrian, and White Raisin. The Grizzly Frontignan bore four bunches of fruit, which were ripe in the first week of June this year, fourteen months from the time of grafting, and for which I obtained an extra prize at the St. Andrew's Horticultural Society's meeting at that period. In this instance, the black stock made no difference on the grizzly fruit.

The Priory, Oct. 27. 1836.

ART. X. *On the Strawberry.* By A. FORSYTH.

THE strawberry is now a staple article in the dessert for at least six months in the year. To have it early, as at Christmas, and from that till the middle of March, is rather troublesome; more so than the fruit, under ordinary circumstances, is



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worth. From the middle of March to the middle of June, is the ordinary season for a supply of forced strawberries; therefore, I shall have that period in view in the following detail of their culture.

As soon as the runners are long enough to lay, let that be done in the following manner: — Prepare your quantity of 60 sized pots, by putting one crock or pebble in the bottom of each; then fill the pots with strong loam (if turfy, so much the better); then let a man take an iron-shod dibber, with two handles, and a bracket for the foot, such as is used around the metropolis for potatoes, and make holes between the rows of strawberries, deep enough to let the pots into the brims; and on the centre of each lay the joint of a runner; and over that lay a pebble about the size of a duck's egg. By this method there is a vacuum under the pots, which drains them; and their being let into the soil saves watering, and preserves a more regular degree of moisture; and the pebble, used instead of a peg, is acted upon by the sun's rays, concentrating heat and moisture, which greatly accelerates rooting. When well rooted, they may be cut from the runners, and potted in thirty-two sized pots, one in each, and plunged up to the brims in some convenient quarter of the garden; in beds, 5 ft. wide, with 2 ft. between, and defended from autumn rains, and spring frosts, in the following manner: — Set up two sticks in the form of the letter A, and in the juncture lay one along the top, and tie the three together; then tie one selvage of a mat to the top rail, and to the other selvage tie a straight-edged stick, one or more lengths of the mats (see *fig.* 107.); then, in dry weather, roll the mats inwards and upwards, and fix them to the cross ends of the rafters by a string loop: the bearers may be 2 ft. apart all along the beds. This will form a cheap and efficient protection from saturating rains and late spring frosts. Thousands of strawberry pots were rendered useless, in the commercial and private gardens around

London, last year, by the frost, for want of some precaution like that now described; and I hope it will be the means of doing away with the present ugly practice of laying the pots on their sides during winter. The hoops and mats used now by nurserymen and others afford a very partial protection; as the curvilineal roof allows almost all the rain that falls on the middle of it to pass through, which the steep straight roof of this effectually prevents.

Thus grown and protected, the strawberries may be brought into the forcing-pit, previously filled with tan, dung, or leaves to within about 18 in. of the glass. On this bed the plants are set, and a gentle temperature of from 50° to 55° is maintained in the pit: if without fire heat, so much the better. From this time, till the plants have perfected their fruits, a leaf should never be allowed to droop for want of water: yet the reverse is equally destructive, more especially before the flower stems appear; as soon, however, as these are up, a liberal supply of water is necessary (yet I should not use saucers to stand the pots in), till the fruits get to their proper size; when it must again be supplied sparingly, only just enough to keep the leaves from flagging, till the strawberries are gathered. Whilst in flower, a temperature of from 60° to 65°, with a free circulation of air, is best. The fruit once set, the plants will do well in a stove where the minimum temperature is as high as 75°. Plants, treated in this manner, introduced into the forcing-house in the middle of December, will generally perfect their fruit about the middle of March. The fruit ought to be thinned out: all the deformed ones should be cut clean away, and the more promising ones should be pegged to the sunny side of the pot.

Dry heat and free air are indispensable to their being well flavoured. Almost all the varieties of this fruit will bear forcing, but the best sorts for it, that I am acquainted with, are, Kean's seedling, and the Aberdeen seedling. A well-managed peach-house is an excellent house to force strawberries in. The plants, after forcing, may be turned out of the pots, and fresh plantations made of them, plunging the balls entire, and drawing the earth close up to the centre of each plant. The greater part of the leaves may be cut off, as they would soon be killed by the sudden transition, unless pains were taken to harden them to the air by degrees, or to shade them after planting out.

Isleworth, Nov. 4. 1836.

ART. XI. *On forcing Strawberries.* By JAMES CUTHILL, Gardener at Dyrham Park.

I HAVE found out an excellent plan with regard to the forcing of strawberries, which produces fruit in great abundance, and

can be carried on to any extent, at a very moderate expense. It will be invaluable to a market-gardener, as well as to the gentleman's gardener; and, instead of myself potting 1000 plants, half that number will do, or even less. Besides, neither the red spider nor the green fly can attack them, as the watering well with water over head destroys the green fly; and the evaporation from the heat of the dung keeps the under part of the leaves continually damp during the night, and, of course, the red spider cannot exist on them. The next great advantage in having strawberries early in pits is, that the houses may be cleared of them before the hot weather sets in; and, consequently, the gardener's man is able to keep his houses clear of various sorts of insects, to the great benefit of his standing crops. My plan is simply this: — The runners of Kean's seedling, as soon as they are well rooted, are taken off, and planted in a bed of prepared mould, and attended with water during the autumn; then, towards the month of February, the plants are taken up, with good balls, and planted into a frame or pit, 8 in. or 10 in. apart each way; after which they are gradually brought on; and, after the fruit is set, it is strange to say they will thrive well in a bottom heat, fit for the cucumber; and, by keeping them moist, it is astonishing how fast the fruit will swell. Our pits hold 150 plants, and each plant brings to perfection double the quantity that can be grown in pots. It must be observed that plants, two years old, produce more in quantity, but not such fine fruit, as newly-rooted runners. It is impossible for me to say how early they can be got in this way until farther trial.

Dyrham Park Gardens, May 29. 1837.

ART. XII. *On raising Salads of Chicory.* By JAMES CUTHILL.

IT is with much pleasure that I have to notice the success that has attended my cultivation of that most valuable salad plant, the chicory, which was brought into notice last year by Dr. Lippold. I am well aware that chicory has been known in this country for many years, and also that it has not been cultivated to any extent; but I may safely say that a more valuable salad plant, for winter use, never was introduced. Our autumns are so very changeable, that the gardener finds great difficulty in keeping endive in a good state of preservation for winter use, while chicory can be taken up, and put into a pit for forcing, at pleasure. The pit which suits it best is one flued all round, on account of damps; and it must be planted in very dry mould. The mould, indeed, cannot be too dry, as the roots are sure to imbibe moisture enough for their support. I planted them 6 in. apart, and found it quite enough. The heat required is very

little, but that must be regulated by the quantity of salad to be raised; and, in place of taking the outside leaves, I cut the head close down, though not so low as to injure the second cutting. Some of the heads produced enough for one salad each, along with other small salads. Every gardener, who has to produce good salads during the winter, ought to provide himself with chicory; and, if he has not got flued pits, the next best place is any shut-up or enclosed shed. If there is a stock-hole, with a fire, so much the better; but no light must get at it, as it must have a fine cream-colour when fit for table. Market-gardeners would also find chicory a most valuable salad when their endive was all over.

Dyrham Park Gardens, Barnet, March 10. 1837.

ART. XIII. *On a Method of obtaining green Mint during Winter.* By JAMES CUTHILL.

THE following simple method of obtaining plenty of green mint, during the winter and spring months, I have practised, for some years past, with great success. I had boxes and pots the first year; but, finding they did not supply a twentieth part of what was wanted, the following plan struck me as likely to be excellent: and so it proved. I first looked out a large two-light frame; I then got a quantity of faggots, with which I built a foundation 2 ft. high, and on which I laid 1 ft. deep of long dung, and above it 6 in. of good light mould; after which I planted the mint, about the end of April, about 4 in. apart. The next winter it was forced by middling hot linings; and I need hardly say the experiment was completely successful. I had a bed of the same kind last year, and will never be without one where I am required to have winter mint. I have a bed of the lily of the valley exactly upon the same principle, and will be glad to let you know the result next year.

Dyrham Park Gardens, Barnet, June 24. 1836.

ART. XIV. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

SILENÀCEÆ.

1386. DIÀNTHUS 11394 ferrugíneus [22.
var. *sulphùreus *Hensl.* sulphur-*coloured* ♃ ○ or 1½ au Su Italy 1836 S p.l The Botanist,

Raised from seed received from Italy, a few years ago, by H. F. Talbot, Esq., of Laycock Abbey, Chippenham. (*The Botanist*, June.)

Leguminòsæ.

1964. *CŸTISUS 17519 Labúrnum [1965.
*var. purpurascens *Hort.*; *Arb. Brit.*, p. 590.; ♀ tm ♣ my.jn P hybrid 1828 S co Bot. reg.

Dr. Lindley observes that he has figured this plant "merely for the sake of disputing the false impression that still exists as to its appearance;" and that he thinks it "not at all worth cultivation." (*Bot. Reg.*, June.) We have already said, in the *Arboretum Britannicum*, p. 590., that, "though this hybrid has been highly spoken of by some cultivators, in point of beauty it cannot be recommended;" but, on looking at our tree this morning, we are almost sorry that we have spoken so disparagingly of it; for, if not beautiful, it is certainly a very curious object. The purple, or rather dingy pink, flowers with us, this season, are much darker than we ever saw them before; and, what adds to the interest of the tree, some pure yellow flowers have come out for the first time; while, in addition to these, there is the large bunch of *Cytisus* purpùreus (mentioned Vol. XII. p. 369.) just coming into flower. To enable a person to judge of this tree, therefore, he must imagine the common laburnum, and the *Cytisus* purpùreus joined to it, and all flowering at the same time, and on the same branch.

Onagràceæ.

1183. ŒNOTHE'RA
*bifrons *D. Don heart-leaved* ♃ ○ or 2 s Y Texas 1835 S co Swt. Br. fl.-gard. t. 386.

This, which we believe to be an entirely new species, was raised by Mr. Miller of the Bristol Nursery, from seeds col-

lected in Texas by the late Mr. Drummond. The plant is biennial, and is of easy culture, growing and ripening its seeds freely in the open border. (*Swt. Br. Fl.-Gard.*, June.)

1185*a*. *EUCHARI'DIUM *Fisch. & Mey.* (From *eucharis*, agreeable; in allusion to the appearance of the plant.)
*concinnum *Fisch. & Mey.* neat ○ pr 1 ap.sep P N. Amer. 1836 S p.l Bot. reg. 1962.

"A little annual plant, allied to Clárk*ia*, found near the Russian colony of Ross, in New California, and communicated to the garden of the Horticultural Society from that of the Emperor at St. Petersburg, in 1836. It flowers in about six weeks from the time of germination; and, although not to be compared with Clárk*ia* pulchélla in point of beauty, is a neat, and by no means weedy, plant, and perfectly hardy." (*Bot. Reg.*, June.)

Umbellíferæ.

*XANTHO'SIA *Dec.* The Xanthosia. (*Xanthos*, yellow; from the yellow tomentum with which some of the species are clothed.) [mag. 3582.
*rotundifòlia *Dec.* round-leaved ⁂ ⌴ cu 1½ jn W. and R Port Jackson 1836 S co Bot.

"This extremely curious umbelliferous plant, so unlike in habit to the majority of individuals of this extensive natural order, is a native of New Holland, where it appears to be not uncommon." The flowers are of a yellowish white, the anthers, and the upper edge of the germen, only being red. It may be considered a hardy green-house plant. (*Bot. Mag.*, June.)

Rubiàceæ.

602. RONDELE'TIA
*odoràta *Jacq.* scented ⁂ □ or 3 jl.au R W. Indies 1836 C s.p Flor. Cab. *36.*

This is a beautiful plant, and may vie with the Ixòr*a* coccínea. It requires to be grown in a humid stove, and to be potted in peat, loam, and sand, using plenty of drainers. It is increased slowly by cuttings. (*Flor. Cab.*, June.)

Compósitæ.

2415*a*. *CHRYSOSTE'MMA *Less.* The Chrysostemma. (From *chrysos*, gold, and *stemma*, a crown; in allusion to the colour of the flowers.)
†21995 tripteris *Less.* three-winged ♃ △ or 6 au.o Y N. America 1737 D p.l Bot. mag. 3583.
Synonyme: Coreópsis tripteris *L.*

"This very handsome plant, although a well known inhabitant of our gardens for a period of 100 years, has not (perhaps for want of novelty to recommend it) found a place in any of our botanical publications. It flowers from August to October, when the cold and frosts cause it to perish down to the roots." (*Bot. Reg.*, June.)

2359. *HELE'NIUM* [gard. 600.
*undulàtum *Maund* waved-*leaved* ♃ △ or 3 au.s Y California 1830 D co Maund Bot.

"It most probably was raised from imported seeds a few years ago, but we have no clue to its history. It is a handsome showy plant for giving variety to the flower borders in the latter part of summer, and will grow in any common soil." (*Maund's Bot. Gard.*, June.)

Ericàceæ.

1339. *RHODODE'NDRON phœníceum *Don's Mill.*, 3. p. 846.; *R.* índicum phœníceum *Arb. Brit.*, p.1149.; Azàlea índica phœnícea *Swt. Br. Fl.-Gard.*, t. 128., *Bot. Mag.*, t. 2667.; A. *lediflòlia* phœnícea *Bot. Mag.*, 3239. [385.
var. *splèndens *D. Don* splendid ⁂ ⌴ sp.l 10 f R hybrid 1835 L s.p Swt. Br. fl.-gard.

Raised by Mr. Wood, gardener to Mrs. May at Sydenham, from a plant of *R.* phœníceum, fecundated by *R.* catawbiénse. (*Swt. Br. Fl.-Gard.*, June.)

Hydroleàceæ.

*WIGA'ND*IA* Humb. et Bonp. (In honour of *John Wigand*, a Bishop of Lithuania.)
*caracasàna *H. B. & Kunth* Caracas ♃ ☐ or 6 ... L Caracas 1836 S l.p Bot. reg. 1966.

"It was originally found at the Quebrada of Cotecita, at the height of 2880 ft. above the level of the sea, by Humboldt and Bonpland. To this country it was introduced from the Royal Garden at Berlin, whence it was sent to His Grace the Duke of Northumberland." It is a tender stove shrub, flowering at uncertain periods. (*Bot. Reg.*, June.)

Scrophulariàceæ.

1789*a*. **REHMA'NNIA* Libosch. The Rehmannia. (An unexplained name.)
*chinénsis *Fisch.* Chinese ☿ △ cu 2 ... Din China 1835 C co Bot. reg. 1960.
Synonymes: R. glutinòsa *Libosch* in *Herb. Petrop.*; Gerárdia glutinòsa *Bunge Enum. Pl. Chinens.*, p. 49.; Digitàlis glutinòsa *Gærtn.* in *Nov. Comm. Acad. Imp. Petrop.*, 14. p. 544.

This plant was sent from the Imperial Garden at St. Petersburg to that of the Horticultural Society, in 1835; and the reported size of the flowers excited great expectations as to their beauty. The dinginess of their colour, however, so much diminishes the effect of their magnitude, that the plant is by no means distinguished for its ornamental appearance. It succeeds best in a cool green-house. (*Bot. Reg.*, June.)

Orchidàceæ.

2554. EPIDE'NDRUM 22747 noctúrnum [reg. 1961.
var. *latifòlium *Lindl.* broad-leaved ⚷ ☖ or 1 o.n Y.W W. Indies 1836 D p.r.w Bot.

This variety differs from E. noctúrnum in several respects; especially in its much greater size, broader leaves, which are of an oblong figure, and larger flowers. (*Bot. Reg.*, June.)

BOLBOPHY'LLUM
**cocòinum* Lindl. Cocoa-nut ⚷ ☖ cu 1 ja F Sierra Leone 1835 D p.r.w Bot. reg. 1964.

A pretty little species of this extensive genus, found growing on the cocoa-nut palm; related to B. recúrvum and B. tetrágonum; but is readily known by its pale flesh-coloured flowers, serrated petals, and concave short lip, delicately ciliated towards the base. (*Bot. Reg.*, June.)

2530*a*. MYA'NTHUS barbàtus [p.r.w Flor. cab. 37.
var. *immaculàtus *Knowl. & Westm.* unspotted ⚷ ☖ ou 2 f.mr G.P Demerara 1835 D

"It resembles (as regards the white labellum) the variety published by Sir W. J. Hooker (*Bot. Mag.*, 3514.); but differs in the total absence of spots." (*Flor. Cab.*, June.)

*Amaryllid*àceæ.

975. HABRA'NTHUS 8028 gracilifòlius [1964.
var. **Boothiànus* Herb. Booth's ☿ △ p.r ½ o Pk Buenos Ayres 1836 O s.l Bot. reg.

It may be considered as half-hardy, requiring only protection from frost; and thrives well in a mixture of loam, peat, and sand. The flowers remain in perfection for eight or ten days. Bulbs of it were last year presented to Sir C. Lemon, Bart., M.P., by Captain T. B. Sullivan, C.B., to whom they had been forforwarded from Maldonado, where they were collected by

Lieut. James Sullivan, R.N., of H.M.S. Beagle. (*Bot. Reg.*, June.) Mr. Booth, A.L.S., after whom this plant is named, is the general superintendent at Carclew.

REVIEWS.

ART. I. *The Northern Flora; containing the wild Plants of the North of Scotland.* By Alexander Murray, M.D. 8vo. Part I., pp. 150, with an Appendix. Edinburgh, 1836.

CONCURRING with the author in his opinion of the utility of local floras, we quote his apology for the one before us: —

"It may be fairly observed," he says, "that the *Scottish Floras* of Lightfoot and Hooker belong to the South and West of the kingdom, rather than to Scotland in general. At least, with some knowledge of both these, doubtless, important and interesting contributions to botany, I cannot bring to recollection any proof that either of the authors ever set foot on the extensive plain, which may be alluded to in a general way, as extending from Angus to Nairn — unless, indeed, it may be the statement of Lightfoot, in his Preface, that he 'traversed the kingdom from Argyleshire to the county of the Mearns' — while their communications from correspondents, relative to that tract, particularly to Aberdeenshire and the contiguous counties, are so meagre as scarcely to be worthy of notice, or of being taken into any practical account.

"With the causes of this comparative deficiency I am unacquainted, and to discover these is no part of the object now in view; as it is enough, if the present publication, besides being sanctioned by custom, is also proper upon general grounds. Upon this point, it seems sufficient to add to the above observations, that inferring the utility of local Floras from their frequent occurrence, and, moreover, considering the remarkable variety and extent of our botanical stations, no one, it is probable, will contend that a Flora of this quarter is improper or unnecessary; and that the North-east of Scotland is either so defective in materials, or so uninteresting to readers, that it deserves to remain undescribed, and to the public in general, botanically unknown. No doubt the alpine parts of the North are occasionally referred to in the *Scottish Floras* of Lightfoot and Hooker, as well as in various publications of the same kind, pertaining to Britain in general. Valuable lists, too, of our rarer species are to be found in the *Edinburgh New Philosophical Journal*, as well as in Anderson's *Guide to the Highlands;* nor ought it to be forgotten, that a copious catalogue of the plants of Forfarshire, by Mr. George Don, is given in Headrick's *Survey* of that county. These considerations, however, in no degree prevent or discourage an attempt like the present. Indeed, in one respect, they ought rather to have the contrary effect, namely, by multiplying the sources from which the publication is to be derived.

"The tract of country which is at present in view, may be supposed to be separated from the rest of the island, by an irregular boundary, stretching from the Forfarshire coast on the east, to that of Sutherland on the west; and may, in a general way, be said to consist of that portion of the east and interior of Scotland which lies to the north of Montrose, in addition to the western part of the county of Sutherland. This district may be considered as consisting of two great promontories, each making a degree of approach to the peninsular form: one of these a large, and, for the most part, a rather level district; the other, mainly, a rugged alpine region. Though it is, therefore, to be understood, that no profession is strictly

made of the present publication reaching beyond Montrose; yet frequent references are made to situations still farther to the south; and an expectation has sometimes been indulged, that, with the aid of a little supplementary matter, which, on various accounts, it may be found necessary to give at the conclusion, this Flora will be found to suit any part of the east of Scotland northward of Dundee."

The work seems to be executed with considerable care, though we think it might have been rendered much more entertaining, if, for example, the *Flora of Berwick-upon-Tweed* had been taken as a model. Comparing the article *Fráxinus* in the two *Floras* (p. 4. of the former, and p. 5. of the latter), it will be found that Dr. Johnson has given a most interesting paragraph, which we could almost be tempted to quote; but Dr. Murray dismisses the tree with a very few lines. He may, perhaps, say, that Dr. Johnson, having reaped the field, has left him only the gleanings of the subject; but this will not suffice to us as an excuse. The more that has been written on any subject, the more abundant is the store of materials from which to produce something better than what has hitherto been done. Surely, something might have been said of the dimensions that the tree attains in the east of Scotland; and some notice taken of the remarkable specimens. At Gordon Castle, for example, according to the Return Paper filled up for the *Arboretum Britannicum*, the ash attains the height of 82 ft.; at Montboddo, there is a tree, 140 years planted, which is 70 ft. high; and at Darnawa Castle there is a remarkable ash tree, of which a drawing, by Mr. Steven, of Elgin, has been kindly sent us by William M'Leod, Esq., of which we have given an engraving in the work referred to. There are several other remarkable ash trees in the east of Scotland, which, independently of Dr. Murray's local knowledge and correspondence, he might have found described in Sir Thomas Dick Lauder's *Account of the Moray Floods*, and other works. It would certainly have been better to have devoted an additional paragraph or two to important plants like the ash, than to have given so many habitats of plants of comparatively little consequence. We hope Dr. Murray will profit from this hint for the future parts of the work; and, when it comes to a second edition, which we sincerely hope it soon will, we trust he will arrange it according to the natural system.

ART. II. *Journal of a Horticultural Tour through Germany, Belgium, and Part of France, in the Autumn of* 1835. *To which is added, a Catalogue of the different Species of Cacteæ in the Gardens at Woburn Abbey.* By James Forbes, A.L.S., Corresponding Mem-

ber of the Horticultural Society, Author of "Hortus Woburnensis," &c. 8vo, pp. 164.

The Duke of Bedford, who spends his princely fortune in a manner every way worthy of a benevolent and enlightened mind, with his usual anxiety for the promotion of useful knowledge, very liberally and kindly proposed, in the autumn of 1835, "that his head gardener, Mr. Forbes, should undertake a horticultural tour through several parts of Germany, Belgium, and France, with a view of inspecting the different collections and productions cultivated in some of the most celebrated horticultural establishments in these countries." In the work before us Mr. Forbes has submitted to the public a cursory detail of the various gardens and objects that came under his observation, during a tour occupying eight weeks; and during which period he visited the following towns and places, and the gardens around them: — Hamburg, Berlin, Potsdam, Dresden, Nuremberg, Munich, Augsburg, Ulm, Eslingen, Stuttgardt, Baden, Rastadt, Carlsruhe, Schwetzingen, Heidelberg, Darmstadt, Frankfort, Coblentz, Bonn, Cologne, Dusseldorf, Neuss, Aix-la-Chapelle, Liège, Namur, Mons, Ath, Engheim, Brussels, Waterloo, Ghent, Antwerp, Malines, Louvain, Valenciennes, Paris (where, at the Jardin des Plantes, Mr. Forbes found Mr. W. Douglas, a young man lately sent to that garden by the Duke of Devonshire), Versailles, Montreuil, Vitry, Rouen, Dieppe, Brighton; where he arrived on October 14., having left London on August 19.

We have accompanied Mr. Forbes through all these places, and the gardens round them, with much pleasure; this being, no doubt, greatly enhanced by our having seen almost the whole of them more than once. We wish, for the sake of encouraging other gentlemen to indulge their gardeners in such a trip, that Mr. Forbes had stated the expense; but this, exclusive of purchases, and of the expense of the packet to and from England, could not, we think, amount to more than 10*l.* or 12*l.* a week. A wealthy and liberal proprietor might indulge his gardener with two or three weeks' expenses, from one or all of the following motives: as a reward for good conduct, as a means of his gardener's personal improvement, and as a means of procuring new plants to enrich his collection, and establishing a gardening correspondence for the same object.

The following extract from the preface will give a very good idea of what a gardener may expect as a result of a few weeks' visit to the Continent: —

"The reader will easily understand," Mr. Forbes observes, "that it required the utmost diligence on my part to fulfil the objects I had in view. Yet I was enabled to investigate such modes of culture as were adopted in the principal gardens, where the produce appeared in any way superior to our

own: to become thoroughly acquainted with the different systems practised at various seasons of the year, would have required a residence of many months.

"In the mode of forcing fruits, and management of the kitchen-garden department, the English gardener will find but little abroad superior to what he is daily accustomed to see at home. It must, however, be observed, that the zeal and anxiety displayed throughout Germany in the cultivation and increase of their collections of plants are in no way inferior to our own. In fact, in succulent plants they far surpass us; more particularly in their collections of *Cácteæ*, which appeared to be a favourite tribe in the principal establishments on the Continent. They are certainly deserving of a more extensive cultivation in this country than they have hitherto obtained. Their various shapes, numerous spines, angles, and the splendid flowers of many of the species, form an interesting and pleasing addition to our botanical establishments; and, of all the plants requiring the protection of the green-house and artificial heat, the *Cácteæ* may be cultivated at the least expense, and exact less attendance than is generally requisite for hot-house plants. The *Pálmæ* are also extensively cultivated throughout the Continent; and, notwithstanding many of them are cultivated in gloomy habitations, they were, in general, very healthy; and evidently more suitable inhabitants for such structures than the deciduous or hard-wooded species. The hot-houses erected for the cultivation of plants, throughout the Prussian dominions, consist of opaque roofs, furnished only with upright lights, which are ill adapted to the flowering or bringing to perfection many of the tender species.

"In most parks of Germany, the pleasure-grounds are very deficient in evergreens, frost being so intense in that country that the *Rhododéndron pónticum*, *A'rbutus*, Laurustinus, *Dáphne*, Portugal, and even common, laurel, require the protection of the green-house during the winter season. If these grounds, however, are deficient in evergreens, they are richly decorated, in most instances, with ornamental vases, statues, and numerous groups of fine sculpture, which contribute greatly to the embellishment of a pleasure-ground. As far as architecture and sculpture are concerned, the Continental royal gardens far surpass those in England; but there did not appear to me, in the quarters I visited, to be a spirit for garden improvement equal to that which is so generally prevalent in this country." (p. viii.)

ART. III. *The Florist's Magazine; a Register of the newest and most beautiful Varieties of Florists' Flowers.* Drawn from Nature, engraved and coloured in the most finished style. By Frederick W. Smith. Royal 8vo. London.

WE noticed the first number of this work (Vol. XI. p. 425.) with approbation; and we have now to announce the completion of the first volume, which took place with No. xii. for June last. It has, as we expected, fully maintained the character of the first number, for the fidelity and beauty of the drawings; and, indeed, it may be safely pronounced as by far the handsomest work on florists' flowers which has hitherto been produced in this country. The practical directions are cleverly drawn up, and the uninitiated reader is taught how to make cuttings, layers, to bud, to inarch, and to cross-fecundate, by means not only of words, but by wood-cuts. The following extract from the preface gives a just idea of the work:—

"It is wholly original in its figures and in its letterpress.

The first volume, now complete, contains 72 highly finished portraits of those varieties in greatest esteem, drawn from specimens in the highest state of perfection; besides occasional woodcuts of new plants, and illustrations of every operation in which there was a possibility of ambiguity; and no expense or labour has been spared to render the work pleasing, instructive, and practically useful. Every flower which we figure is drawn and coloured from the flower itself, while in the very bloom of its beauty; and every mode of treatment which we recommend is that which is practised by the most successful cultivator of the species; and, in most instances, it comes directly from the breeder or the grower of the specimen which we figure. It gives us pleasure to add, that we can confidently rely on the invariable support of all the more eminent breeders and growers of flowers, both for the choicest specimens, and for the most improved modes of treatment."

The subjects treated of in the first volume are, Aurícula, Alstrœmèr*ia*, Amaryllis, *C*hrysánthemum, Caméll*ia*, Carnation, Campánula, Dáhl*ia*, Gaulthèr*ia*, *G*ladìolus, Hyacinth, *N*arcíssus, Pansies, Primrose, Pinks, Polyanthus, Pelargoniums, Picotees, *P*hlóx, Rhodochìton, Rose, *R*hododéndron, Tulip, Tigrídia, *V*erbèna, and Window-Gardening.

Art. IV. *Practical Remarks on the Failure of the Potato Crop; with Instructions how to Remedy the Evil.* By William Stent, Nursery and Seedsman, East Stockwith, near Gainsburgh, Lincolnshire. 8vo, pp. 19. Gainsburgh.

The remote cause of the failures in the potato Mr. Stent attributes to our late very mild winters; another, and proximate cause is, the wretched manner in which the potatoes are kept through winter, in heaps thatched with straw, and covered with earth; in which state they heat and vegetate immediately, and have quite exhausted themselves before the planting season; and a third cause is, too late planting.

"Potatoes," Mr. Stent says, ought to be "all planted by the last week in April, or, at the latest, by the first week in May; and, to accomplish this, every possible exertion ought to be made to prepare the ground in autumn. Where the land is not in danger of being flooded during winter, the manure should be worked into the land in autumn, and incorporated with the soil, so that the young fibres may receive the benefit of it; which they cannot do under the old system of confining the manure close to the potatoes when planted in the rows."

Mr. Stent next describes the course of treatment which he would recommend to be pursued with potatoe tubers in autumn, which are intended for planting in the following spring.

"First of all," he says, "they ought to be picked out by hand from the rest at the time of taking up the crop; and that each ought to be of a size

weighing about four ounces. These should be taken and laid thinly on a piece of clear ground, or on short grass, where they should remain at least three weeks, exposed to the action of the sun and the air night and day, and longer, should the weather permit, until they become quite green. If there be any fear of frost, they must be covered over with a thin covering of straw, to prevent the frost from injuring them; but the covering should be taken off again as soon as a change of weather takes place. While they are thus lying on the ground, let them be watered over twice a week with a solution of saltpetre and water in the following proportions: in ten gallons of spring or river-water, dissolve half a pound of saltpetre, and let this be applied by a watering-pan with the rose on." [The intention of this solution, Mr. Stent informs us by letter, is to harden the skin of the potatoes, and thus to strengthen their vegetative powers, by keeping them perfectly dormant.] "When they have lain in this state about ten days, it would be advisable to turn them over; and, after remaining the time before specified, a place should be prepared to pie them down for winter; which should be done, if possible, in a shady situation on the north side of a building or high hedge. A circular piece of ground must be cleared about 8 ft. in diameter, in the centre of which must be placed the ventilator, as represented in the plate." [This ventilator is a tube, 6 in., or 8 in., or a foot square, the sides being formed of strips of wood, 2 in. broad, and 1 in. thick, with openings between the strips 2 in. wide: below, it communicates with an air-drain made under the floor of the heap, and above with a cap, which may be taken off, or put on, at pleasure. The same principle is extensively employed in Scotland, in ventilating corn-ricks which have been put up late in the season.] "This should be kept perfectly upright, and the potatoes placed round it, the quantity not to exceed thirty or forty bushels. This being done, the next thing will be to cover the whole down neatly with straw, not more than 2 in. thick. In this state let them remain a week or ten days, or more, according to the mildness of the weather; then cover them about 6 in. thick with earth, keeping the ventilator continually open at the top, except in severe frost, when it can be easily closed by a whisp of straw or hay. The whole of the sides of the pie might be covered down with litter, or potato tops: in this state they may remain until the weather becomes more severe, when the litter may be taken off, and about 6 in. more of earth added, and the whole beaten well down with a spade. After this the litter may be replaced, every person exercising his own judgment whether this covering should be increased or diminished, according to the state of the weather; that is to say, in mild winters the covering might be diminished, whereas in very severe winters it will be necessary to increase it.

"The advantages of the ventilator will be seen by its allowing the evaporation to pass off the whole depth of the pie: by this means the potatoes will be kept in a cold dormant state, and will not grow until the time of planting; consequently, the centre eye will be preserved, which will always grow the first and the strongest; and therefore the potato, possessing all its inherent powers of vegetation, must, of course, make a much stronger shoot than those which have been previously exhausted as before described." (p. 14.)

The rationale of the progress of the young plant is thus given: —

"From the base of this shoot immediately proceed the fibres or roots which support the ensuing plant in an horizontal direction. Above these proceed, in the same direction, the laterals, or side shoots, which produce the tuber or potato; and, as soon as the fibres are sufficient to support the shoot, the original plant is of no further service: the fibres then become the support of the plant. Now, it is evident that the tuber, or potato, receives its nourishment or support from the sap, which passes in the main stem from which these laterals proceed. This operation is carried on by the ebbing and flowing of the sap, and is caused by attraction and repulsion, which depend upon the

alternate action of heat and cold. Consequently, when the atmosphere which surrounds the plant is at a higher degree of temperature than the soil in which the roots are, then, of course, the sap is ascending. Likewise, when the soil in which the roots are is at a higher degree of temperature than the atmosphere which surrounds the plant, then the sap is in a descending motion. Now, I am satisfied that it is from this descending current of the sap that the tuber or potato receives its nourishment, and not immediately from the fibres, or the soil. This is seen, for instance, by cutting off the tops of the potatoes just below the surface: the consequence is, that the tubers will not grow any more; therefore no potatoes ought to be suffered to remain in the ground after the tops are decayed, or cut down by the frost." (p. 15.)

Mr. Stent finds this mode of treatment to produce one fourth part more of crop than the old mode. He states this, not only from his own experience, the details of which he has given, but on that of a friend, a farmer, who has cultivated potatoes for the market for the last twenty years. We recommend the pamphlet to such of our readers as cultivate the potato extensively; though we regret that the price is so high as 2*s.* 6*d.* for only nineteen widely printed pages of large type, and a very indifferent woodcut.

ART. V. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published; with some Account of those considered the more interesting.*

PROCEEDINGS of the Fifth Meeting of the British Association for the Advancement of Science, held in Dublin, during the Week from the 10th to the 15th of August, 1835, inclusive; with an alphabetical List of the Members enrolled in Dublin. 4to, 129 pages. Various plates and woodcuts. Dublin, 1835.

This, from the preface, appears to be the production of Philip Dixon Hardy, a printer in Dublin, and the conductor of that deservedly popular journal, the *Dublin Penny Magazine.* The volume is very neatly got up; and, considering the mass of matter, and the number of engravings and woodcuts, it is very cheap. We were anxious to see it, chiefly on account of a paper by Dr. Alman, "On a Natural Arrangement of Plants according to the Natural System;" but the doctor's system does not appear to us to be sufficiently developed to be applied either in a garden or in a herbarium. Mr. Niven's plan (of which an account is given in this Magazine, Vol. XII. p. 116.) is noticed in p. 19. of the book before us, and Dr. Alman's in p. 60.; a plan of the latter being given in the Appendix, No. 2. We should like much to see a plan of this kind given in such detail as to render it suitable to be carried into effect on a large scale, or even in a small garden, where the groups might be separated by gravel walks and box edgings; or, as we think would be better, by walks paved with clinkers, with edgings of brick, stone, or slate.

We should be most happy to see Dr. Alman's plan fully explained, being quite satisfied of the superiority of the natural to the Linnæan system; though the latter is unavoidably followed in most botanic gardens, from the very limited space which can be afforded for this kind of display.

GERMANY.

Practische Anleitung zur Fruchttreiberei. Nach Zwanzigjähriger Erfahrung für Lehrer und Zöglinge der Gärtnerei und Gartenfreunde bearbeitet von C. J. Fintlemann, Königl. Hofgärtner, Lehrer bei der Königl. Gärtner Lehranstalt zu Potsdam. A practical Introduction to the Forcing of Fruits, drawn from Twenty Years' Experience, &c. 8vo, 175 pages, and two copperplates. Potsdam, 1837.

This is an excellent little work, illustrated by very neat engravings; and, though the whole of it is not exactly suited to the climate of England, there are so many excellent things in the book, that, in some future Number, we shall probably give part of it in an English dress.

Die Pfauen-Insel. Ein poetisches Gemälde von F. K. Keil. Ed. 3., 10 pages. Potsdam, 1836.

The frontispiece to this "poetical picture," is a perspective elevation of the palm-house in the Pfauen-Insel, of a solid parallelogrammic form, apparently between 50 ft. and 60 ft. high; but, no scale or dimensions being given, we are unable to compare it with the palm-houses of this country, Austria, or France.

FRANCE.

Rapport fait par M. Rendu, le 16 *Mars,* 1836, *au nom de la Commission Chargée d'indiquer à la Société les Moyens les plus efficaces pour la Destruction du Ver Blanc et du Hanneton.* 8vo. 32 pages. Paris, 1836.

Le Bon Jardinier, Almanach pour l'Année 1837, *accompagné d'une Revue Horticole.* Paris. 12mo, price 7 francs; in London, 7*s.*

This excellent and well-known work goes on with renewed vigour. The *Revue Horticole* contains notices of what the experienced and judicious editors, M. Audot and M. Poiteau, consider some of the principal improvements made in France and Britain during the past year. Among the latter are, Mr. Forsyth's pot for striking cuttings, and Mr. Niven's plan for a natural arrangement, both from the *Gardener's Magazine.* Our much esteemed and eminently scientific correspondent, M. Vilmorin, has noticed the *Quinoa*, the *Pinus austriaca*, the Victoria

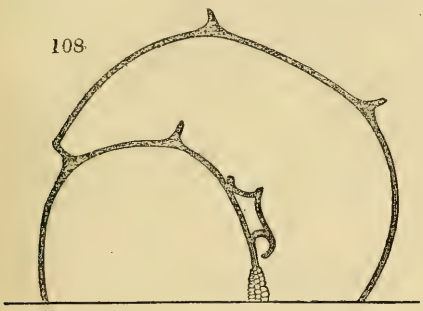
wheat, and other agricultural novelties, which we had previously mentioned in this Magazine.

Catalogue et Prix-Courant pour 1837 *de la Collection des Plantes de L. Jacob-Makoy, Horticolteur, Rue Neuville sur Avroy, à Liège.* 8vo, 55 pages. Liège.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Equitable Rent for farming Land. — "We venture to say that the farmer will never feel comfortable until his landlord shall agree to share with him both prosperity and distress. The writer of these remarks, himself a landlord, saw this long since; and, having brought the tenants on his own lands (with some difficulty it is true) to understand the subject, and to see the propriety of mutual gain or loss being insured by regulating rent by prices, he has had the high satisfaction of seeing his tenants, not only contented, but anxiously desiring high prices, that they might pay him a better rent. Not only has he that satisfaction, but every one of them, feeling himself secure from loss, has gone on with activity to execute extensive improvements, and to reclaim waste land; thus amply compensating to their landlord any imaginary loss which short-sighted persons are apt to dread." (*Le Couteur, on the Varieties, Properties, and Classification of Wheat. Scotsman,* Feb. 8. 1837.)



A simple Mouse-trap. — To set the trap: — On a crust of cheese, about half an inch high, set the brim of a cup, and on the tip of its base rest the brim of a basin, as shown by *fig.* 108. To take the mouse out: — Turn the basin round till the tail appears, by which pop the prisoner into water. To cottagers this may be useful, being simple, cheap, and ready. I have seen twenty-four mice destroyed in one day by this means. — *A. David. London, Jan.* 2. 1836.

To destroy the Larvæ of the Cockchafer — On the occasion of a secret composition being announced, lately, for the destruction of the white worm (the larvæ of the cockchafer), M. Letellier de Saint-Leu-Taverny has made known to the Academy of Sciences that, since 1835, he has communicated to the Society of Natural History experiments, proving that the greater number of poisons, which are the most active on man, have scarcely any effect on these larvæ, and that alkalies (cyanuses) are the most speedy, the most certain, and the least expensive means of destroying them, without injuring vegetation. In consequence of this discovery, he has made use of the residuum of the calcination of animal matter with alkali (potash or lime), which is impure (cyanuse). He says the success is satisfactory, and he has restored sickly shrubs to full vegetation which were supposed to be devoured by these insects. He owns, however, that he could not repeat his experiments in 1836. (*L'Hermès,* Feb. 1837.)

Flued Borders. — The vigour with which males of the genus *Crinum*, and many other plants, grow out of doors against the front wall of a stove, persuades me that a great variety of plants might, with a little care, be cultivated better in the open ground than under glass, if the border in which they are

to grow were flued underground, and a tarpauling, or any water-proof covering, placed over them at the times when it might be requisite to exclude either rain or cold. The covering might hang on the two sides of a strong longitudinal pole, like the two slopes of a roof, and be made to roll up either with or without a spring. There are many plants which seem to enjoy a cool atmosphere, but will not flower or thrive vigorously without the stimulus of heated earth at the root. Having chosen a situation where a furnace and boiler could be placed under ground, I would carry the smoke-flue as far as its heat would extend on one side, and hot-water or steam-pipes in a different direction, as might be found convenient, enclosed in a stone or brick flue, to as great a length as its influence might reach. In such a border, I believe, the genus Hedýchium, and many others, would flower perfectly, with the assistance of fire, in the summer, requiring nothing in winter but a covering to throw off the wet; and the heat might be turned into other pipes, for the advantage of plants which might require the warmth in winter rather than in the summer. If, in front of a wall, a movable veranda, which might be either ornamental, or made of thatched hurdles or hurdle-gates, would throw off the wet, which is the principal cause of injury in winter; for many shrubs will endure the access of severe frost to the head, if all wet can be effectually excluded from the base of the stem and from the root by any sloped heading. Under such a veranda, with occasional heat to the flue, during the early summer, and, perhaps, in severe frost, Amarýllis, Brunsvígia, Bùphane, Nerìne, Hæmánthus, and all the allied genera of African bulbs, as well as the South American, would certainly succeed better than with any other treatment. I believe that not only those, but even some of the tropical crinums, would succeed better than in a stove, and, probably, many shrubs which might not be expected to live there. The advantage of a veranda or pent covering, however rude, on the north side of a wall, for the protection of half-hardy plants, such as Caméllia japónica, the Asiatic species of *R*hododéndron, &c., is not sufficiently known. It is the excitement occasioned by the access of the sun that makes such plants liable to injury; and a south aspect, whether in summer or winter, is prejudicial to them. I believe that the covering of a pent roof, in a northern aspect, without any flue, is more congenial to those plants than a green-house, care being taken to prevent any heavy rain or snow from being driven upon them by a strong north wind, which is easily done by hanging mats along in front in such an emergency. (*Herbert's Amaryllidàceæ.*)

Art. II. *Foreign Notices.*

FRANCE.

The beautiful Hot-houses of M. Tassin of Douai contain an immense collection of rare plants, managed with the greatest care, by his excellent gardener, Calot. The collection of Orchídeæ in these hot-houses far surpasses that of every other in France. Many of them have not yet been described by botanists; and other known species have been procured from England, without regard to expense. (*L'E'cho du Monde Savant*, May 13. 1837.)

SPAIN.

(*Continued from* Vol. XII. p. 367.)

Thùja articulàta. — Captain Cook has the merit, in common with the consul at Morocco, Mr. Drummond, of discovering the tree which produces the timber of unparalleled durability, known in Spain and the north of Africa as the *alerce*, and which Captain Cook and Mr. Drummond have ascertained to be the *T*hùja articulàta of Vahl. In England it is a frame evergreen tree, which may be found at Messrs. Loddiges's and in some other nurseries. It is figured in the *Botanical Cabinet* and in the *Nouveau Du Hamel*. There is a specimen of the timber at the Horticultural Society's

rooms in Regent Street. When in Cordova, Captain Cook, with the assistance of a workman, ascended the roof of an old Moorish church, and "found a part of the original woodwork, most of which has been replaced by pine, in consequence of decay from the penetrating of the water through the tiles, which are laid too horizontally. The under part, which was seen from the mosque, and formed the ceiling, was unpainted, the side of each plank being slightly carved on the edges; and it has now the colour of old oak or chestnut. This is the *alerce* of the old writers, which has hitherto baffled enquiry as to the tree which produced it. It is resinous and fine-grained, quite unlike the various pines which I subsequently found formed the woodwork of the Alhambra, the Alcazar of Seville, and other Moorish works, or that of any pine I am acquainted with. There are traditions of its growing in the neighbourhood, but no tree answering the description is to be heard of; nor have I found it in any botanical work. The decisive proof of its not being an indigenous tree, is its not being mentioned in the curious book of Arab agriculture, written by a Moor of Seville, in the 12th century, and translated by Banqueri. He dedicates a large portion of his book to the enumeration of trees and shrubs, describing their qualities, modes of culture, even to transplanting large trees, and knew as well as the professors of the present day the mode of effecting it; the consequences of moving trees from bad to good soil, or the reverse; that some sorts bore the meddling with their roots better than others; and most other arcana of the art, which are believed to be modern discoveries. He names various sorts of pines, but never mentions or alludes to the *alerce*, which it is certain he must have known had it been indigenous, or even cultivated. The subject is well worth enquiry, as few woods are known capable of resisting, as this has done, the effects of a period of nine centuries; the specimen I speak of being perfectly uninjured. Since my return to England, I have been shown a communication made to the Horticultural Society by Mr. Drummond, consul at Tangier, who had been engaged in investigating the species which has received the name of *alerce* in Spain. It appears quite clear, from his account, that this tree is the *Thùja* articulàta, which grows in the mountains of Barbary, and of which a large plank had been sent from Tangier, and may be seen in the Society's rooms in Regent Street. It is well worth the attention of those engaged in procuring timber for the navy, and for other purposes requiring durability. I have subsequently made every enquiry, and consulted every authority, without finding a trace of the existence of this tree in Spain. It is extremely probable that in a work of such sanctity as a mosque, intended to be second only to that of Mecca, wood known by that ingenious people to be so durable should be transported from Africa for the purpose." (vol. i. p. 4, 5.)

Gardens of Spain. — The following notices are selected from different parts of the *Sketches*. On the outskirts of Granada, both within and without the walls, are gardens, and vast quantities of cactus, the fruit of which in summer affords salutary food for the poorer classes. At Malaga there is a beautiful alameda (public walk), and the eastern beach serves for promenades of greater length. "In an angle beyond the river, backed by the chain which bounds the Vega to the west, is Churriana, a village resorted to in summer and autumn: a kind of Frescati to the Malaguenians. An individual has made a garden and grounds, of which the progress of a few years shows what might be effected with industry in this delicious climate." (vol. i. p. 19.) In the defile of Xixona, near Alicante, there is a fine Moorish castle, and gardens producing great quantities of fruit. The village of Campo de Orgiva, on the Sierra Nevada, is well built, with beautiful grounds and gardens. The village of Lanjaron near it, and from which the eternal snow of the summits of the mountains is seen in the distance, is surrounded with the richest vegetation. "It is embosomed amid the mulberry, chestnut, ilex, and the olive, with the lemon, orange and palm. The vines are trained on trees, as in Italy. The slope terminates abruptly below in a deep *barranco*, or ravine, of which the opposite side rises like a colossal wall: a detached peak is crowned by a

ruined castle. In the valley below are mills like those of Italy. Far to the south, over a ridge called, *par excellence*, the Sierra de los Moros, is seen the Mediterranean. To the west are open lofty ranges, forming landscapes of the most classic form. Such is the situation of this beautiful place, which is the glory of the Sierra de Nevada, and may vie for picturesque beauty with any in Europe. It is much resorted to in summer on account of the mineral springs, one of which is a very strong saline aperient, and of great reputed efficacy for debility and indigestion. The climate is so mild, notwithstanding its elevation, owing to the protection of the mountain at the back, that the trees escaped uninjured in the dreadful winter of 1829-30, which was so fatal throughout the south of Spain. The open defile which separates the mass of the Sierra Nevada from the lofty lands of Alhama and the Sierra de Tejeda, forms the communication of the Moorish capital with the coast. In loveliness it cannot be excelled. It is a grove of olives, with palm, orange, and lemon trees; fruit gardens and buildings, like those of the Poussins. The open space, amidst this charming scenery, affords magnificent back-grounds of the opposite mountains, and are in the truest style of the grand landscape." (vol. i. p. 52, 53.)

The *huerta* of Velasillo, between Granada and Malaga, " forms a *plateau*, or table, elevated like a terrace above the bed of the river of Orgiva, which is covered with gardens and white flat-roofed houses, mixed with orange and lemon trees. A copious stream, clear as crystal, is conducted through the grounds, and, after dispensing fertility among them, is precipitated over the terrace, in the manner of the cascatelle at Tivoli. On a broken height, at the back, is a Moorish keep, or feudal castle, of the shape of an irregular polygon. Above, in perspective, towering over the lower chain, is seen the Piz de Veleta, one of the highest peaks of the Sierra Nevada. From this sequestered spot, which is one of the most beautiful places in this region, the more so from its situation in the midst of barren mountains, a carriage road has been made to Motril, which is part of a plan to complete the communication between that place and Granada." (vol. i. p. 69, 70.)

Anòna Cherimòlia. — " At Motril, at a moderate distance from the sea, on a plain covered with plantations of sugar and cotton, the *cherimoyer* is common, growing in the open air. I tasted the fruit, which was scarcely ripe; but it was well flavoured, something resembling the guava. They said the season was unfavourable, and that they were inferior to the usual produce. The trees were in perfect health." (vol. i. p. 70.)

" Near Malaga a garden has been formed with a view to the trial of the culture of exotic plants, which it is to be hoped may excite the industry which is so lamentably deficient in this beautiful province." (vol. i. p. 74.)

" In Seville the houses often occupy open spaces, with many courts, or patios, and small gardens in the Oriental manner are seen within the walls." (vol. i. p. 129.)

" There are beautiful promenades at Seville on the Guadalquivir, which have been very much increased of late; and in a few years they will be equalled by few in Europe. The ancient Alamada is surrounded by buildings, and, being in a bad quarter of the city, is only used on certain festivals. A small one has been added in a central part, which is very much frequented in the evenings, especially in summer. Some additions are now making on the land side, but they are of little importance, excepting as improving a deserted space, and will not, in all probability, become places of public resort, which is amply provided for on the banks of the Guadalquivir." (vol. i. p. 131.)

" The *alcazar* is in part occupied by the royal palace and gardens. Some of the work of this palace is Moorish, some Moorish restored, some of the time of Charles V., in good taste, and some modern, in extremely bad. The dimensions of it were very large, as it comprised gardens and detached houses spread over a considerable space, in the Oriental manner, parts of which are now let out or sold to private individuals. The Moorish part is magnificent,

scarcely yielding, in many parts, to the *Alhambra*. It is kept up as a royal residence, and will probably survive the palace of Granada." (vol. i. p. 133.)

"At Valencia the paseos, or public promenades, are magnificent, extending outside the walls to the Grao, or seaport, nearly a league distant."(vol. i. p.152.)

"At Barteelonni a magnificent promenade has been made outside the town."

"At Madrid every thing is exotic. The strawberries are brought from Aranjuez, thirty miles distant; the apricots from Toledo, fifty miles; peaches are carried on mules from Aragon, and butter from Asturias. Every part of Spain is put in requisition, not for luxuries, which cannot be said to exist, but to supply the necessaries of life to a spot in the middle of a desert, and which would soon revert to its original state of forest, but for the adventitious aid perpetually forced upon it." (vol. i. p. 162.)

The Botanic Garden of Madrid. — "Notwithstanding the piercing cold of winter, and that the reservoirs of the Retiro freeze sufficiently to allow skaiting, many plants resist the climate uninjured, which could scarcely be expected to do so. The Chinese mulberry (*Mòrus papyrífera*) grows to a large size, and the *Mèlia Azedarách* thrives perfectly in the botanic garden. There is an instance of the palm growing in a sheltered situation. These trees owe their preservation to the heat of summer and autumn, which enables the wood to be perfectly hardened before they are assailed by the winter frost. The situation of the public garden, which in the spring is a delicious promenade, will prevent it ever being of much use as a botanical repository. The site is badly chosen for the purpose, and the natural soil indifferent; but it was made at a vast expense, and is an ornament to the metropolis. It serves for the purpose of giving botanical and agricultural lectures. The plan of Charles III. was magnificent in making this garden, which was intended to be combined with the formation of noble cabinets of natural history, worthy the capital of Spain and the Indies, and were to occupy a range of buildings along the Prado, of which those now used for picture galleries were the commencement." (vol. i. p. 176, 177.)

The Appearance of the Country. — "The country, in the route by Villaviciosa from Bilboa to Gijon, is exceeded in natural beauty and fertility by few in Europe. The character is exactly opposite to that of the other side of the peninsula, where all is aridity, and only the plants are seen which thrive under the burning rays of a cloudless sun, save where nurtured and forced by man. Here all is natural and almost eternal verdure. You travel amid arbutus, the bay, or *Laúrus nóbilis*, which forms large trees, and grows amongst their dunghills; the alaternus, phillyrea, holly, fern, and ulex, which abound, and the ivy, which is rare, in the interior. The common ilex, which is only seen in this part of Spain, occurs in places, and the beautiful *Menziè*sia *Daboèci* (Irish heath) is seen in prodigious quantities. The chestnut and the common oaks and hazel are the natural growth of the soil; walnut, apple, and pear orchards are attached to every house. The orange, and even the lemon, grow luxuriantly, but I believe their fruit is not brought to perfection. A hedge of *Cáctus* surrounded the garden of some amateur, who had probably lived in Andalusia or Valencia. The coast is generally bold and rocky, the cliffs supporting elevated table lands; but the scenery is occasionally varied by descending to flat and sandy beaches. Numerous streams of the clearest water, abounding in trout and other fish, flow from the mountains. This beautiful country is one of the poorest in Spain, although the people are far from wanting in industry. Their houses are badly built; they are the worst clothed, and the most uncleanly in their persons, in the whole kingdom; they are generally ill-favoured and rugged in features.

"This country differs from most parts of Spain; the people living in hamlets and detached houses, which are thickly planted and covered with trees, in the manner of those in Devon. No wine is made in the country, and the common drink of the people is a bad cider. Attached to each house is a magazine, or small building of wood, exactly a miniature of the common Swiss

cottages, the size bearing a perfect proportion to the parent building, and mounted on pyramidal stones, in the same manner as stacks are placed in some parts of England to prevent vermin climbing up. In these are kept their stores and provisions. I observed many of them by the road side unlocked, bearing silent testimony to the honesty of this rude people." (vol. i. p. 79—81.)

" *The Country around Seville* is nearly uncultivated, with the exception of a few gardens immediately at the gates, and some beautifully situated convents, with extensive orange groves. On the right of the Guadalquivir is a beautiful line of height, in the manner of Hampstead, affording the most lovely sites for country houses, of which there are very few at present. At a greater distance, on the opposite side of the river, is a tract of the same description, rising above the Guadaira, which flows into the "great river" a little below the city. There are *cortijos* scattered over the plain around, in beautiful situations; but at present they are considered by the people to be uninhabitable, from the attacks of robbers, who render any detached building untenable. To the east there is a partial cultivation, in ascending the Guadalquivir; but the numerous villages which once existed along the banks are rapidly hastening to decay, from the usual effects of the present system on the agricultural districts, aggravated by the malaria, which is very prevalent on both sides the river. An extensive scheme, impracticable from its enormous expense, has been set on foot for making a canal to Cordova. A part of it, however, is likely to be made, to connect the city with a place higher up, and to supply water for irrigation, which will be of great value for the cultivation of the plain to the east of the city.

" A few families repair to the Sierra Morena during the summer, where the heat is less oppressive, and the air delicious. This plan would be much more general if the roads were better. At present, Cazalla, Constantina, and Aracena, which are the principal places, and are quite in the heart of the Sierra, can only be approached on horseback, and even then with difficulty. The remedy is of extreme facility; no kind of difficulty existing to the making good roads to every part of this neglected country. Game is found in prodigious and almost incredible quantities. The malaria extends some distance from the river into the Sierra; but when you approach the centre it ceases. Nothing can be more beautiful, or more fertile, than the country in the heart of the Sierra, which is now in a state of utter neglect and *despoblado*. The soil is a rich mould, capable of producing anything. The townships have large tracts of common land, which are waste, and unproductive; whilst, from the want of management, the proprietors, who ought to be wealthy without any other possessions, are starving." (vol. i. p. 136—138.)

Agriculture. — The soil on the great river of Malaga lies under the level of the river. It is exactly like the Campagna of Rome. It seems particularly suited for the growth of tobacco, from which it is said samples have been produced equal to that of the Havannah.

" After crossing the dreary plains of La Mancha, I descended by the Puerto de Almanza to the Venta del Conde, a new and spacious *posada*, recently built, like many others, for the purpose of improving the accommodation on the great roads. I hired a mule, and proceeded by a lovely tract, cultivated like the Val d'Arno, to San Felipe, or Xativa of the Moors. The castle, which is one of the finest ruins in Spain, crowns the straggling summits of the last eminences of the great range, which suddenly breaks off to the west of the Xucar, and is succeeded by the beautiful *huerta*, or garden, of Valencia." (vol. i. p. 28.)

The District of Alicante " is cursed with an aridity which prevents its being one of the most productive spots in Europe. An establishment, to the east of the city, which I visited, and where an individual had introduced some of the Valencian modes of culture, irrigation and artificial grasses, exhibited lucerne, which yielded, they assured me, twelve cuttings in the year. This plant was certainly known, and most probably introduced, by the Moors." (vol. i. p. 31.)

In the valleys of the Sierra de Gador, " the vines are planted amongst the crumbling schist, and afford an excellent wine, where it seems impossible any thing should grow. Mulberries, olive, orange, and lemon trees, with patches of corn, are grown wherever they can be watered, and not the smallest portion of ground is lost." (vol. i. p. 51.)

At Motril, near Granada, " an important branch of agriculture has lately been tried with complete success; the production of rice of a kind brought from Puerto Rico, which is called *arroz secano*, from its growing on dry ground, like corn, and not requiring to be laid under water, which causes the fertile lands susceptible of this lucrative culture at Valencia, and other parts of the south of Europe, to be converted into abodes of pestilence and death. The specimen I saw grown here appeared perfect, and several species, to the number of no less than fourteen, from the Philippine Islands, were in the course of trial. Should they answer, the benefit to this country, especially Valencia, will be immense. Coffee has been tried, but unsuccessfully; and it is hardly to be regretted that experiments should have failed, so seductive in appearance, but the produce of which could not be expected to withstand competition with the tropical climates, and, most probably, would have caused the expenditure of time and capital to little purpose. The cotton grows well, and is reputed to be of excellent quality; but they complain of the autumnal winds being injurious to the crops when they are just ripe.

" The *vega*, or plain, of Motril is a flat which has been formed by the transported materials brought down by the river of Orgiva, the mouth of which is to the west. At a league distant is Salobrena, a bold headland, with a ruined castle on the summit, the only remains of the palaces and hanging gardens of the Moors, of whom it was one of the celebrated retreats. There is a small *vega*, principally planted with sugar-canes: all around is desert. Almunecar is the next place, which is a small neat town on a beautiful bay, with a territory of sugar-canes. There is a large establishment lately set up, by a public-spirited and enterprising company of Germans at Malaga, with a view of improving the manufacture of sugar and rum, by the introduction of English machinery in place of the rude apparatus of the old Spanish *ingenios*. A sample of rum I tasted was certainly equal to that of the West Indies, and sugar which, by the old method, had an unpleasing appearance, but was abundantly saccharine, will, no doubt, be equally good." (vol. i. p. 70, 71.)

" The *batata*, or sweet potato (*Convólvulus Batatas*) is extensively cultivated in the neighbourhood of Malaga. They are fully equal, or superior, to those of the West Indies, and are sent to various parts of the country, where they are roasted and eaten with the dessert.

Cochineal Culture. — " Another branch, which promises one day to be of great value to this part of the coast, is the *cochineal insect*. The facility of producing it has been proved most satisfactorily, and the quality is excellent. Some I saw at Cadiz was considered equal to the best from America. The difficulty at present is the price, as they say it cannot be brought to pay the expense. That must, however, diminish with practice. Another complaint is the tithe, which, on a production of such intrinsic value, is a serious and probably insurmountable evil, and will operate to retard the progress of the cultivation, unless some means be taken to prevent it. The coast of Malaga seems particularly suited to it. There are abundance of warm and sheltered spots now unproductive, that merely require the addition of common walls to break the wind, which is prejudicial to the insects. The *Cáctus Opúntia* grows naturally, and they cannot urge the argument brought against the increase of the mulberry tree, that water is wanted." (vol. i. p. 73, 74.)

The Agriculture of the Plain of Valencia " is on a par with that of any district in Europe, and is a decisive proof that neither climate, nor races of men, nor surrounding examples, nor badness of laws, are certain impediments to the industry of man. In management it resembles the Val d'Arno, and the novel sight, in Spain, is seen of detached houses, which are very small and scattered every where over the plain. It is possible this isolated mode of living may

produce, in some degree, the sullen and distrustful manners so much noticed in the peasantry, and so different from the social and frank habits of the inhabitants of other provinces, who live constantly together. The soil is naturally bad, and only kept productive, like the Vega of Granada, by constant forcing and irrigation. The rice-grounds are the most lucrative branch, drawing the waters, which convert their districts into pest-houses, principally from the Xucar. If the culture of *arroz secano*, mentioned in the account of Motril (p. 329.), be introduced, it will be of inestimable advantage to the whole of this kingdom. At present the corn is drawn from La Mancha, in exchange for rice, and oil, and other articles. The oil is considered the best in Spain, owing, no doubt, to a little better mode of manufacturing. There is a noble establishment of central schools, called *Escuelas Pias*, which is on a very large scale, and appeared admirably conducted. There were about three thousand boys educated gratis, and a corresponding separate establishment for girls on the same plan. There is an upper branch for the education of those whose circumstances enable their expenses to be paid, who are lodged and separately kept, and prepared for the higher colleges. The academy, also, has a very numerous attendance of youth, to learn the art of design.

" To the east of Valencia the country is flat, forming a low terrace, almost uninterrupted, to the Ebro, having the sea on one side, and the mountains on the other, and is certainly the most beautiful drive on any high road in Spain. The country is irrigated wherever it is possible to do so, and in parts where the bare rock forbids any other culture, the *algarroba* (Caralonia) yields an ample produce for the maintenance of their abundant stock, for which herbage is denied by the climate." (vol. i. p. 150—153.)

" *The System of letting Land* varies very much. In many parts, the lands are regularly let, by money rent. In general, however, the destructive and improvident mode of management by agents is the practice. In others, the *metairie*, or dividing, system, the parties sharing the produce, as in Tuscany, might be found. In very many places, the peasantry are masters of the soil, and pay very little rent. In a portion of the vast possessions of Medina Celi, which came under my observation, one ninth only of the value of the rental was paid to the landlord, the rest being consumed in taxes and other expenses. With this proportion, and the paying exorbitant interest when money is required, it is impossible the proprietors can be otherwise than poor. Agriculture is, in most parts, in the rudest state.

" The spring corn is generally thrown on the ground, which has not been touched, and has all the winter weeds remaining in it. It is then scratched in with a miserable plough, and left to nature. The dryness of the climate causes this to be a trifling evil, for heat sets in, the corn ripens, and the weeds perish together.

" It is not uncommon in the south to see men returning from plough seated on a mule, or even on an ass, with their whole apparatus tied on by their sides. Every thing is in the same proportion. If you ask them why they do not improve? the answer would be, 'who is to pay the expense? We have already more corn than we can sell, or consume, and we follow the plan of our ancestors.' We should pause before condemning this reasoning, when we see in England four horses and a bullock dragging one plough, yoked in a line, and four magnificent horses to a wheel-plough, as in Hampshire, where they can only plead in part the same excuse. The Oriental scriptural practice of ploughing, with many yoke together, is very much practised in Andalusia, where I have counted the number of twelve, as in the calling of Eleazar." (vol. ii. p. 40, 41.)

The Roads of Spain. — " More has been done in Spain since the peace, considering the means of the government, and the local difficulties, in improving the old and in making new roads, than in any country in Europe. If the present system be persevered in, of which there is every probability, as all parties are equally desirous of doing so, in a few years every principal place in the country will be made easy of access. The great line of road between the

capital and Bayonne has been entirely remade, and is now equal to most in Europe. The branch from Burgos to Valladolid might be supposed to be made by M'Adam. Another branch to Santander is now open, after very great exertion. There is a tolerable road from Vittoria to Bilboa, with a branch from that city directly to the great line of Madrid; another shorter line is also constructing, and there is a communication with Castro, a small town on the coast, between Bilboa and Santander. A coast-road, or longitudinal line, to connect the northern provinces, is entirely wanting. At present the lines are all lateral, leading only from the interior to points on the shore; and the numerous estuaries and rivers form strong impediments to the construction of better communications in countries so poor and thinly peopled, and at present almost without commerce. From Tolosa, on the great road to Madrid, there is a communication with Pamplona, Zaragoza, and Barcelona by diligences and canal, making the line of the Ebro complete. The new road from Vittoria to Pamplona, which has been made at a vast and unnecessary expense, from the profuse manner in which *the metal* is laid on, is at length nearly completed, and was expected to open for carriages in the autumn of 1832. It was finally opened in the spring of 1833. The road which connects Barcelona and Madrid, by Zaragoza, is open, and some details only are wanting to complete it. This is become the favourite communication of the metropolis with the Catalan capital, and is very much frequented. The roads in Catalonia are excellent, and are extending wherever the policy of the military authorities has permitted it; for there are districts where there appear to be reasons for preventing, as much as possible, an invading army from having facilities to penetrate. The roads in Valencia are tolerable, but, in the vicinity of the capital, are very much injured by the habits of the peasantry in taking off the surface for manure or compost. The new line to connect that city with Madrid, by the shortest and best line of Cuenca, instead of proceeding by La Mancha and the Puerto de Almanza, is slowly proceeding to completion. A road is partly made to connect Xativa, on the plain of Valencia, with Alcoy, Alicante, and Murcia, but was, when I passed it, suspended, from a difficulty about passing through some place; and the government have since offered a premium for the best plan of a new line by the coast. The road from Murcia to Granada is practicable for carriages, but with difficulty in the rainy season, and requires a great deal of improvement. Granada is the centre of an important part of the kingdom, which has hitherto been left in the greatest neglect, the steps which were taken in the times of Charles III. and IV. to improve it not having been followed up. At present it participates in the general move, and in a few years will be as accessible as most other parts. The line to Madrid, through Jaen, is complete, with the exception of a few miles from the latter part to Baylen, where it meets the great road of Andalusia. It does the highest honour to the engineers, and is as well made as any road in Europe. *Ventas* and *posadas* are still wanted, and escorts will be very useful when the diligences begin to circulate. The constructor of this road, and of that from Burgos to Valladolid, which equal the best roads in the world, is an officer of engineers, who is at present superintendent of the canal of Castile, whose talents promise to make him of the greatest use to his country. A contract has recently been made, I think by Remisa, to complete this road, and those which connect Granada with Motril, the nearest point on the coast, and Malaga, the route to which is hardly practicable for carriages during the rainy season. A road ought to be made from Velez, along the coast, to Motril, as also from Velez to Granada. Malaga has only two carriage outlets at present; a magnificent road by Antequera, which is the direct Madrid communication, through Ecija; and that to Granada, which is carried through Colmenar. A line is imperiously called for from Malaga, to communicate with Cadiz, Seville, and Lower Andalusia, through Ronda, the whole of which valuable country is hardly accessible. Jealousy of the *plaza*, as Gibraltar is emphatically termed in that part of the country, as the fortress *par excellence*, may have occasioned there having been no steps taken to open this district. The

routes in Estremadura are badly kept; and, after the severe floods in the spring of 1831, the communication across the Tagus was cut off for some time, except by boats; the bridge of Almarez never having been repaired since the war of independence, although magnificent pine forests are close at hand. I crossed in a kind of raft, at considerable risk, the diligences remaining on their respective sides; and in a *posada*, where we slept, were *galeras* full of passengers, who had passed fourteen days waiting for an abatement of the flood, which was still increasing. The roads to Galicia and Asturias are in great part complete, excepting across the lower part of Old Castile, which will be a work of great expense, and cannot yet be undertaken.

"*A vast amelioration has taken place in the management of these improvements.* They are now executed entirely by contract, by which means government are enabled to provide exactly for the demand, and proportion the quantity of work to the means they have of paying for it. The most minute parcels are thus advertised in the papers, and let to the best bidder. Formerly this was impossible; when a sum was ordered to be expended on a public work, it was assailed by a swarm of pillagers, as the wasps assemble on a sunny day around fruit or honey suddenly exposed, or as vultures wind a carcass lately killed, and assemble from the distant regions of the air, who soon shared it out, leaving only the skeleton to attest the banquet having taken place. This is the chief reason for the country abounding in unfinished monuments: not that the genius soared above its means of completion, as has been supposed, but because the corruption made it impossible to execute any plan, however well imagined.

"The progress which is made in these enterprises can only be adequately appreciated by observation of difficulties attending it from local impediments. As soon as the lines of road are practicable, diligences are set in motion upon them, a work of no small difficulty at first. Those who have traversed the interior of Spain, and know the *ventas* and *posadas*, will judge of the labour of establishing accommodation for twenty or thirty persons in one of these places." (vol. i. p. 207—211.)

General Improvement of Spain.—"Before any progress, or even a commencement, can be made in the political and economical reorganisation of the kingdom, the present system of retaining the nobles about the court in the performance of the menial offices, transmitted from the dark ages, must be reversed, and, in place of being restricted from it, the landholders must be compelled to build houses, and live at least a part of the year on the estates; and the stars and decorations, instead of being bestowed for services alike degrading to those who exact, or to those who perform them, must be given to the founders of colonies, or the makers of roads and bridges, or bestowed for the encouragement of agriculture, by the construction of *pantanos*, and *acequias*, or breeding of horses, and planting woods, or other improvements." (vol i. p. 159, 160.)

CHINA.

The Botany and Gardening of China will probably, at no distant period, be examined by Europeans in a more accurate manner than it has hitherto been. It appears, from a review of *Gutzlaff's Travels*, in the *Westminster Review* for July, that "the Chinese, so far from having a deadly hatred to foreigners, as is generally supposed, and as the East India directors assure us (*Review*, p. 253.), are exceedingly fond of strangers, anxious to trade with them, and very curious to know every thing respecting Europe. Some parts of the country are of extraordinary richness and beauty. Cha-poo is the principal seaport which carries on a commerce with Japan. This commerce is entirely an imperial monopoly. There is a tolerable harbour; and the town, together with its suburbs, is perhaps five miles in circuit, built in a square, and intersected by numerous canals, which are connected with the Hang-chow river. Nothing can exceed the beautiful and picturesque appearance of the surrounding region. We may say, that, as far as the eye can range, all is one

village, interspersed with towering pagodas, romantic mausoleums, and numerous temples. The adjacent country is called the Chinese Arcadia; and surely, if any territory in China be entitled to this name, it is the tract around Hang-chow and Cha-poo. It seems that the natives also are sensible of their advantage, in inhabiting this romantic spot. They have tried to improve upon nature, and have embellished the scenery with canals, neat roads, plantations, and conspicuous buildings. We found nowhere so much openness and kindness as among them. Their intelligent enquiries respecting our country were endless, and they never seemed satiated with our company." (*Gutzlaff*, p. 429., as quoted in *Westminster Review*, vol. xxi. p. 253.)

Art. III. *Domestic Notices.*

ENGLAND.

Mimulus Hodsoni.—Having raised what I think a pretty variety of *Mimulus*, I send you a plant of it; and at the same time have to request that, if you think it deserving notice in the *Gardener's Magazine*, will you adopt the name of *Mimulus Hodsoni*? The plant was raised from seeds of M. *roseus*, fertilised with the pollen of *M. cardinalis*.

My reason for wishing it to be named after my respected employer W. S. Hodson, Esq., is, because he, for upwards of *fourteen years*, has been to me a "kind and gentle master;" and, although it is but a poor compliment to pay to his kindness and generosity, still it is the best that I can do at present, and I earnestly hope that he may receive it in the same spirit in which it is tendered. — *H. Turner. Botanic Garden, Bury St. Edmunds, June* 19. 1837.

We have lent the very finely grown plant (which is upwards of 2 ft. high, and for which we are greatly obliged to Mr. Turner) to our neighbour, Mr. Hopgood, Bayswater, a most successful propagator, who will soon have plants of it for sale. — *Cond.*

SCOTLAND.

Festuca Uvii, Ure's Fescue Grass, is another agricultural grass brought into notice by Mr. Bishop, and of which some seeds have lately been distributed by the London Horticultural Society. In a letter to Mr. Munro, of the Horticultural Society's Garden, Mr. Bishop observes, "*Festuca Uvii* has the peculiar property of resisting the effects of drought beyond any other grass that has come under my observation. My attention was first attracted to a single plant of it, in the Botanic Garden, Edinburgh, during the dry season of 1826, when all the varieties around it were in a sickly or burnt up state, and it alone remained healthy and green. I have exhibited in the Museums at Edinburgh, Stirling, &c., specimens of the root and leaves, from 2 ft. 9 in. to 3 ft. in length; last year I sowed out with it some very poor gravelly soil, which has taken well." We have sent a few seeds of this species, and of the Hudson's Bay meadow-grass (*Poa pratensis nervosa*), to Mr. Forbes, at Woburn Abbey, and also to Kew, where, we trust, they will be introduced into the respective grass gardens, as standard specimens, as well to make them known to botanists as to agriculturists. — *Cond.*

Art. IV. *The London Horticultural Society and Garden.*

April 4. 1837. — *Exhibited. Euphorbia* splendens, *E.* jacquiniæflora, *Boronia* pinnata, Azalea indica Smithii, *Erica* picta, Cinerària *populifolia*, Oncídium ampliàtum, and Brássia Lanceàna, from Mrs. Lawrence. *Tecoma* stans, from the Duke of Northumberland. *Arctostaphylos myrtifolia*, from Wm. Harrison, Esq. Templetonia retusa, Tropæolum pentaphyllum, seedling verbena, *Aristolochia trilobata*, from Mr. Labouchere. Amaryllis sp., from Sir Felix Booth. Dowler's seedling pears, from Covent Garden Market, under the name of Wild Seedling. Oranges and citrons, from the Rev. J.

Luscombe. *Euphórbia* spléndens, and *E.* Byrònia, from Mr. J. Green. Kennèdia monophýlla, and Keen's seedling strawberries, from R. Eyles, Esq. White sugar from beet, and specimens of the roots, from Mr. Charlwood. *Stachys* palústris, sorts, from Mr. Henekey. *Rhododéndron* arbòreum, which has bloomed for eight years successively, from Mr. Edmund Johnston. *Acàcia* hýbrida, *Euphórbia* spléndens, *E.* Byrònia, Styphèlia tubiflòra, *Rhododéndron* brentfordiénse, six camellias in pots, six roses in ditto, *Acánthus* móllis, Anthocércis álbicans, and a new white *Cyclamen*, from Mr. Glenny. Golden Harvey and Hawthornden apples, from J. G. Fuller, Esq. *Rhododéndron* arbòreum, and *R.* i. álbum, from Mr. Wells. Cut flowers, from Mr. Strangways. Two seedling cactuses, one Lady of Persia pink, Ruéllia formòsa, and four pots of seedling cyclamens, from Mr. Buck, Blackheath. Corræ'a pulchélla, and C. speciòsa, from G. A. Lake, Esq., Tulse Hill House, Brixton. *Víscum* álbum, on the oak, from Mr. Loudon, to whom it was sent by Mr. D. Beaton of Haffield, near Ledbury. (See p. 206.). Tropæ'olum brachýceras, from Mr. Thompson, Norwood.

From the Garden of the Society. Plants. Bérberis Aquifòlium, Acanthophíppium bícolor, *Aristolòchia* trilobàta, *Erica* grandinòsa, Indigófera coccínea, Nemóphila insígnis, Camél*lia* imbricàta, and C. Colvíll*ii*.

Awarded. A silver Knightian medal to the Rev. J. Luscombe, for oranges; and to Mr. J. Green, for the *Euphórbia* spléndens. A silver Banksian medal to Mrs. Lawrence, for Brás*sia* Lance*àna*; to Mr. Thompson, for Tropæ'olum brachýceras; to W. Harrison, Esq., for *Arctostáphylos myrtifòlia*; to R. W. Eyles, Esq., for Kennèd*ia* longe-racemòsa; to Mr. G. Glenny, for *Euphórbia* Byròn*ia*; and to J. G. Fuller, Esq., for the golden Harvey apples.

April 18. — *Read.* A paper on the Method pursued in the Cultivation of the Cattlèy*a*, by Mr. Wm. Perrin, gardener to R. Harrison, Esq.

Exhibited. Azàlea índica phœnícea, and *Rhododéndron* arbòreum var., from Messrs. Whitley and Osborn, Fulham. *Acàcia juniperína*, Azàlea índica álba, Pomadérris sp., scarlet nonpareil, golden Harvey and Alfriston apples, from Mr. Forbes, gardener to H. Pownall, Esq. *Acàcia* verticillàta, Lantàna, Sellòw*ii*; Oncídium carthaginénse, and Styphèlia tubiflòra, from Mr. Glenny. *Satýrium* aúreum, from J. Reeves, Esq. Beaumónt*ia* grandiflòra, from S. F. Phelps, Esq. Oncídium from Jamaica, O. bifòlium; Maxillària Harrisòn*æ* var. M. aromática; Brás*sia* caudàta, *Rhododéndron* cinnamòmeum, and a Chinese azalea; from Messrs. Rollisson. A brace of cucumbers, from Mr. P. Flanagan. A lily from Guatemala, and an orchideous plant from Brazil, from James Bateman, Esq. Hybrid rhododendron, from Mr. Gaines. *Rhododéndron* Smíth*ii*, *R.* conspícuum, Azàlea índica púlchra and A. i. cárnea, from Messrs. Chandler. *Carissa* spinàrum, from G. Kirkpatrick, Esq. Camél*lia* Siebóld*ti*, and Lobèl*ia persicifòlia*, from Mr. H. Low. Five seedling *Cacti*, from Mr. Robert Buck. A pair of Etruscan vine-pruners, and Camél*lia* corállina, from Edmund Johnston, Esq.

From the Garden of the Society. — Oncídium altíssimum, Cattlèy*a* Forbès*ii*, *Aloe* dístans, *Sempervívum* úrbicum, Indigófera coccínea, Nemóphila insígnis, Dracæ'na stricta, Camél*lia* reticulàta, C. imbricàta, C. Colvíll*ii*, and Gray's invincible camellia.

Awarded. A silver Knightian medal to Messrs. Whitley and Osborn, for *Rhododéndron* arbòreum; to Mr. G. Glenny, for *Acàcia* verticillàta; to Messrs. Rollisson, for the new variety of Oncídium carthaginénse; to Messrs. Chandler, for Azàlea índica púlchra; and to Messrs. Low, for the Camél*lia* Siebóld*ti*. A Banksian medal to Mr. Forbes, for golden Harvey apples; and to Mr. Flanagan, for cucumbers.

May 1. — At the Anniversary Meeting, held this day, the following officers were elected: — T. A. Knight, Esq., president; T. Edgar, Esq., treasurer; G. Bentham, Esq., secretary; and the Duke of Devonshire, the Hon. W. F. Strangways, and Lancelot Holland, Esq., as the new members of the council.

May 2. — *Read.* A paper on the Culture of the Strawberry, by T. A. Knight, Esq., F.R.S., president.

Exhibited. *R*hododéndron Smith*ii*, Camél*lia* corállina, C. exímia; Diósma capitàta, *C*ýtisus canariénsis, E'pacris paludòsa, and Pultenæ'*a* strícta; from Messrs. Chandler and Sons, Vauxhall. Oncídium papílio, *E*uphórb*ia* jacquini*æflòra*, six seedling cinerarias, Nemóphila insígnis, two forced roses in pots, and one seedling cactus, from Mr. John Green, gardener to Sir E. Antrobus. Stanhòpe*a* grandiflòra, *A*ristolòchia trilobàta, *H*ibíscus sp. nov., and Eriostèmon *b*uxifòlium, from Mr. Glenny. Camél*lia* Presslèy*i*, from Mr. Pressley, gardener to Walter Boyd, Esq. Camél*lia* coccínea màjor, *S*pártium sp., E'pacris ceriflòra, Cattlèy*a* sp. from Brazil, and Comespérma sp., from Mr. Young of Epsom. Twenty-four China roses in pots, from Mr. Lane of Great Berkhampstead. Twenty-four auriculas, from Mr. H. Groom of Walworth. Platylòbium chorizemifòlium, Azàlea índica new var., A. i. Smíth*ii*, *E*rìca Linnæ'*a*, *E.* pellùcida, Camél*lia* reticulàta, Amarýll*is* Jóhnson*i* acuminàta, Tríllium grandiflòrum, *C*áctus alàta, *E*uphórb*ia* jacquini*æflòra*, Oncídium divaricàtum, *R*hododéndron Smíth*ii*, and Tropæ'olum tricólor; from Mrs. Lawrence. *C*ombrètum purpùreum, and a seedling pelargonium, from G. Fleming, gardener to C. Ranken, Esq. Golden russet, London pippin, and margil apples, from Mr. George Phillips, gardener to Miss Trevor, Tingrith Gardens, near Woburn.

From the Garden of the Society. Nemóphila atomària, *Bérberis* rèpens, *B.* *A*quifòlium, *B.* glumàcea, *Ribes* *m*alvàceum, *R.* glutinòsum, *R.* cèreum, *R.* sanguíneum and varieties, *R.* punctàtum, *R.* tenuiflòrum; Oncídium altíssimum, Pholidòta sp., Acanthophíppium bícolor, *A*'loe vìrens, *A.* dístans; *E*uphórb*ia* *M*yrsinìtes, *C*lématis montàna, Camél*lia* imbricàta, C. reticulàta, C. Colvíll*ii*, Warratah, various-flowered, and Gray's invincible.

Awarded. A Knightian medal to Mrs. Lawrence, for her collection of green-house plants; to Mr. J. Green, for six cinerarias; to Mr. G. Glenny, for the Eriostèmon *b*uxifòlium; and to Mr. C. Young, for the new species of Cattlèy*a*. A Banksian medal to Mr. Groom, for auriculas; and to Mr. Pressley, for the new striped seedling Camél*lia*.

May 16. — *Read.* A paper on the Preservation of the early Foliage of Peach and Nectarine Trees, by T. A. Knight, Esq., F.R.S., president.

Exhibited. Heartsease, from Mr. R. S. Mountjoy. Cinerarias, from Mr. J. A. Henderson. Hardenpoint or beurré rance pears from a standard, Chaumontel ditto from a standard, Hardenpoint or beurré rance ditto, from a west wall, from John Williams, Esq., C.M.H.S. Eight pelargoniums in pots, from Mr. Dennis. Oncídium pulchéllum, Dendròbium Calceolària, and Epidéndrum sp., from Mr. P. N. Don, gardener to James Bateman, Esq. Ardísia paniculàta, *C*ýtisus Webb*iàna*, *C. R*hododáphne, and Oxylòbium argénteum, from Mr. Thomas Harris. Azàlea índica phœnícea, and A. i. álba, from Mr. Glenny. Three pots of seedling cinerarias, *C*ánna Sellòw*ii*, Calceolària Fothergílli, Clív*ia* nóbilis, *O*'xalis Piótt*æ*, brown-flowered nasturtium, Anigozánthus sp. from Swan River, Clu*ýtia* sp. from Swan River.

From the Garden of the Society. *Bérberis* fasciculàris, *Ribes* speciòsum, *N*árcissus tubiflòrus, *N.* angustifòlius, *N.* odoràtus; Fritillària vittàta, F. pyrenàica, F. Melèagris var.; Acanthophíppium bícolor, Myánthus cérnuus, Oncídium divaricàtum, Malpíghi*a* crassifòlia, *P*hlóx Drummónd*ii*, *E*rìnus Lychnídea, *E*uphórb*ia* *M*yrsinites, Oxyùra chrysanthemòides, Plectrìtes congésta, Calceolària péndula, Camél*lia* reticulàta, C. Colvíll*ii*, C. imbricàta.

Awarded. A Knightian medal to Mr. Bateman, and Banksian medals to Mrs. Marryat, and Mr. J. A. Henderson, for the plants this day exhibited.

The lists of prizes awarded at the first and second exhibitions will be given, with that of the third, in our next.

Art. V. *Covent Garden Market.*

The favourable change in the weather has produced a corresponding difference in the supplies furnished to the market; and an equally general effect as

regards the prices of most of the leading articles usually supplied at this season, the most important of which are lettuces and peas: of the former a large supply has been furnished, of most excellent quality, the prices quoted are very low, and the article is but little in demand; of the latter, a very considerable quantity was furnished in sacks and sieves, but, being much in request, they obtained rather better prices than in the earlier period of the week, or rather than on the preceding market-day. New potatoes, in consequence of the better supply of other vegetables, have receded materially in value. Cauliflowers are being liberally supplied, and are likely to be more generally so, should the present dry warm weather continue to prevail; the present prices are moderate. Strawberries from the open ground are plentiful, with the prospect of a heavy crop: generally, the prices quoted can only be said to rule for the day, as they are materially depressed or affected by every day's market. Gooseberries and currants are reported to be a heavy crop, consequently will be cheap. Cherries are also generally plentiful, and will be very moderate in price. Of all other fruits little can be said, but the reports are generally favourable. — *C. G. M. June* 24. 1837.

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage, per dozen:		
White	0 0 9	0 1 6
Plants, or Coleworts	0 2 6	0 3 0
Cauliflowers, per dozen	0 4 0	0 6 0
Legumes.		
Peas, per barge of 6 ½ sieves	0 9 0	0 12 0
Peas, per half sieve	0 1 6	0 2 0
Peas, per sieve	0 3 0	0 6 0
Peas, per sack	0 15 0	0 18 0
Beans, per half sieve	0 1 6	0 2 6
Kidneybeans (forced), per hun.	0 1 0	0 1 6
Tubers and Roots.		
Potatoes - per ton	7 0 0	8 0 0
Potatoes - per cwt.	0 7 0	0 8 0
Potatoes - per bushel	0 3 6	0 4 0
Kidney, per bushel	0 4 0	0 4 6
Scotch, per bushel	0 3 6	0 4 0
New, per pound	0 0 6	0 0 9
Turnips, White, per bunch	0 0 6	0 1 0
Carrots, young, per bunch	0 0 9	0 1 3
Red Beet, per dozen	0 2 0	0 4 0
Scorzonera, per bundle	0 1 3	0 1 6
Horseradish, per bundle	0 3 0	0 5 0
Radishes:		
Red, per dozen hands (24 to 30 each)	0 0 9	0 1 0
White turnip, per bunch	0 0 1	0 0 2
The Spinach Tribe.		
Spinach, per sieve	0 1 6	0 2 0
Spinach, per half sieve	0 0 9	0 1 0
Sorrel, per half sieve	0 0 9	0 1 0
The Onion Tribe.		
Onions, green (Ciboules), per bunch	0 0 4	0 0 6
Leeks, per dozen bunches	0 4 0	0 0 0
Garlic, per pound	0 1 0	0 0 0
Asparaginous Plants, Salads, &c.		
Asparagus, per hundred:		
Large	0 4 6	0 6 0
Middling	0 1 6	0 2 6
Small	0 1 0	0 1 6
Lettuce, per score:		
Cos	0 0 9	0 1 3
Cabbage	0 1 0	0 0 0
Celery, per bundle (12 to 15)	0 1 6	0 2 0
Pot and Sweet Herbs.		
Parsley, per half sieve	0 1 0	0 0 0
Tarragon, per dozen bunches	0 3 0	0 0 0
Fennel, per dozen bunches	0 1 6	0 0 0
Thyme, per dozen bunches	0 4 0	0 0 0
Sage, per dozen bunches	0 2 0	0 0 0
Mint, per dozen bunches	0 3 0	0 0 0
Peppermint, dried, p. doz. bun.	0 1 0	0 0 0
Marjoram, per dozen bunches	0 4 0	0 0 0
Savory, per dozen bunches	0 2 0	0 0 0
Basil, per dozen bunches	0 4 0	0 0 0
Rosemary, per dozen bunches	0 3 0	0 0 0
Lavender, dried, per doz. bun.	0 4 0	0 0 0
Tansy, per dozen bunches	0 1 0	0 0 0
Edible Fungi and Fuci.		
Morels, per pound	0 14 0	0 0 0
Truffles, per pound:		
English	0 12 0	0 0 0
Foreign	0 12 0	0 0 0
Fruits.		
Peaches, per dozen	0 15 0	1 10 0
Nectarines, per dozen	0 15 0	1 10 0
Almonds, per peck	0 7 0	0 0 0
Plums, desert, per punnet	0 6 0	0 8 0
Cherries, per pound	0 6 0	0 10 0
Gooseberries, per half sieve	0 2 0	0 2 6
Strawberries, per pottle	0 1 0	0 2 0
Pine-apples, per pound	0 5 0	0 7 0
Grapes, hot-house, per pound	0 3 0	0 7 0
Melons, each	0 4 0	0 8 0
Oranges, per dozen	0 1 0	0 3 0
Oranges, per hundred	0 10 0	1 4 0
Bitter, per hundred	0 12 0	1 10 0
Lemons, per dozen	0 0 9	0 2 0
Lemons, per hundred	0 6 0	0 14 0
Sweet Almonds, per pound	0 2 6	0 0 0
Nuts, per bushel:		
Brazil	0 16 0	0 0 0
Spanish	0 18 0	0 0 0
Barcelona	1 0 0	0 0 0
Turkey	0 16 0	0 0 0

THE

GARDENER'S MAGAZINE,

AUGUST, 1837.

ORIGINAL COMMUNICATIONS.

ART. 1. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

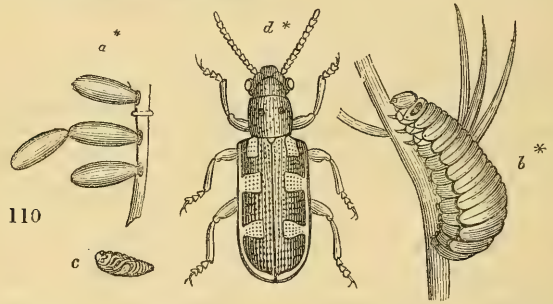
No. 6. THE ASPARAGUS BEETLE.

ONE of the most elegant species of coleopterous insects found in this country is the little beetle which is attached to the asparagus, and whose habits will form the subject of the present article.

Order, Coleóptera *Linnæus.* See p. 109.
Family, Criocéridæ *Leach.* (Plant beetles, so named after the principal genus.)
Genus, Crióceris *Geoffroy.* (A name derived from two Greek words, signifying a ram's horns; in allusion to the form of the antennæ, which are cylindrical, with globular joints, somewhat like the horns of a ram.) Lèma *Fabricius*, Chrysomèla *Linnæus.*
Species, Crióceris aspáragi *Linnæus* (Chrysomèla asp.) *Donov. Brit. Ins.*, i. pl. 28.
Le Criocère porte Croix de l'Asperge *Geoffroy Ins. Paris.*, vol. i. p. 241.

This beautiful little insect is ordinarily about a quarter of an inch in length, of an oblong form, with the head rather broader than the thorax, which is cylindrical, and narrower than the elytra. Its general colour is a fine blue black: this is the colour of the legs and head: the antennæ are black; the thorax, or, more properly speaking, the upper surface of the prothorax, is of a fine red, with two dorsal black spots, which, in some individuals, are so small as to be scarcely visible. The elytra are long, each having several rows of impressed spots; the external margin is orange-coloured; the central part, or suture, blue black; the disc of each elytra is varied with cream-coloured and blue-black marks, which have somewhat the appearance of a cross upon a pale ground, the transverse bar of the cross being in the centre of the back. These spots vary occasionally in their size: sometimes, for instance, the pale humeral spot is wanting, and in others the bars of the cross disappear. The specimen figured represents the ordinary appearance of the insect greatly magnified.

Fig. 109. represents a branch of asparagus, infested with the asparagus beetle in its different states. In this figure, *a a* are the eggs; *b b*, the larvæ; *c c*, the exuviæ of the larvæ; and *d*, the imago: *e* is part of the branch not yet attacked. *Fig.* 110. shows the eggs (*a*), the larva (*b*), the pupa (*c*), and the perfect insect (*d*), all greatly magnified.



During the last summer, this insect abounded to a very great extent, amongst the asparagus, in some parts of the neighbourhood of London. It was especially troublesome in the gardens of Syon House; but it appeared to be very local in its habits; as some places were quite free, although at no great distance from infested spots. It appeared, also, in great quantity in my father's garden at Hammersmith; so that I had good opportunities of investigating its habits. Kirby and Spence merely say of it: "The diuretic asparagus, towards the close of the season, is sometimes rendered unpalatable by the numerous eggs of Lèma aspáragi *Fabr.*; and its larvæ feed upon the foliage after the heads branch out." (*Introduction*, vol. i. p. 192.) It is, however, in the latter case that the injury caused by this insect must be most material; and especially in respect to young plantations of this vegetable. This insect has again appeared in our garden this summer; and it is quite evident that it prefers the young seedling beds to the coarse full-grown shoots which

have been allowed to run up. The injury, I have no doubt, which a young seedling bed would receive from its attacks would have the effect of greatly weakening the roots; for the whole of the leaves (as we may term the slender elegant spray), being entirely consumed, the plants would necessarily lose a great deal of nourishment, and be less able, in the following season, to throw up good heads, which, of course, it is the cultivator's chief interest to obtain.

It is not, however, by the insect in the perfect state that the mischief is caused: at this period of its existence, its whole object is to continue its kind, and eating is no longer a matter of necessity: it is by the larva, or grub, that the injury is produced.

The females deposit their eggs upon the young and tender stems, seeming to prefer those which support the flowers. These eggs are of a long oval form, and of a large size compared with the insect; hence, it is probable that a single female does not deposit above eight or ten eggs. They are affixed to the stem at one end, by means of a black viscid secretion, which dyes the surrounding part of the stem for a short distance. I have often observed two eggs placed together; one being attached at the extremity of the other. Their colour is dirty slate. In a short time, the larvæ are produced. In this state, they are quite the reverse of their parents, and, instead of exhibiting a variety of colours and elegant markings, they are of a disgusting form and a dirty slaty green colour, almost black; and, when disturbed, the emit a considerable quantity of thick black fluid. The body is, as usual, composed of 13 segments, the first of which, or the head, is black and supplied with strong 4-toothed jaws, and short antennæ; the next segment, or the prothorax, is marked with two shining black spots, of a leathery texture, and is furnished on the under side with two short, articulated, black legs, as is also each of the two following segments: the remaining segments are gradually thickened. The general consistence of the body is fleshy, the external integument being thin and membranaceous; the segments of the abdominal part of the body are furnished with fleshy tubercles, which are employed as legs. The body is also armed at its extremity with a similar pair of these fleshy proleg-like tubercles. Bouché (*Naturgesch. der Insekt.*, i. tab. x. f. 38.) has represented this larva: the figure, however, is destitute of thoracic legs, and the body is represented as clothed with bristles. This is incorrect, there being no hairs upon the rings of the body; which, both in general appearance and colour, reminds more of the trunk of the elephant than any thing else. It is the habit of the larva of the typical species of this genus (Crióceris merdígera *Linn.*) to form a covering for itself of its own excrement (in the manner described by Réau-

mur, and introduced into the *Insect Architecture*); but the larva of the asparagus beetle is different in its habits, following the ordinary plan in this respect. The larvæ are to be found from the end of June till September. They, of course, do not appear until the asparagus is sufficiently grown for their support; the eggs being deposited on the plant, and not in an adjacent situation; and they arrive at their full growth in about a fortnight. They are most partial to the tenderest shoots; and, even whilst I have been writing this notice, some of the largest of these larvæ had quitted the twig on which they were feeding in order to attack a much younger and tenderer stem which I had placed by its side. They shed their skins several times, the exuviæ being visible amongst the unconsumed twigs of the asparagus. When full grown, the larvæ descend into the ground, where they construct a thick pergameneous cocoon, in which they are transformed into white pupæ of the ordinary form; the limbs, antennæ, and wings being folded in separate sheaths along the breast.

This state lasts about another fortnight; so that six or seven weeks may be considered as the duration of the insect's life; one third of which is occupied by the egg, another third by the larva, and the remaining third by the pupa and imago states. The perfect insect will, however, live a long time if confined; some, which I kept last autumn in a box, remaining alive for many weeks; though, had they been able to deposit their eggs in a proper situation, they would doubtless have died long before. Some individuals, also, survive the winter: indeed, I am inclined to think that the insect, through this inclement part of the year, is in the imago state, hidden in some secret place or other, and not in the pupa state, as is ordinarily the case with insects in general. Certainly, the closely allied species, Criócerís cyanélla, may be found under the bark of willows, throughout the winter; and I saw a perfect specimen of the C. aspáragi creeping about the asparagus bed as soon as ever the plants appeared above ground. This, of course, is an important part of the insect's economy; because, if the fact be as I suppose, it will be evident that the beetles, which make their appearance in the spring, are destined to be the parents of the whole of the future broods; and, therefore, by bestowing a little trouble during the time of cutting the asparagus, in order to kill the few beetles then visible (which, from their bright and lively colours, would be a very easy task), much of the subsequent injury would be remedied. It is certain, however, that, if this precaution be not taken, the propagation of the insect is very rapid; and as, during the summer months, it is to be found in the egg, larva, and imago states at the same time on the same plant, it is evident that there is no regularity in the succession of the broods. Even afterwards, when the asparagus is full grown, some of the plants are

liable to be entirely stripped of their foliage by the larva; and it would be worth while, even then, to catch as many of the perfect beetles as possible, in order to diminish the invaders of the next year's crop. The beetle is, however, very cunning; for no sooner is it approached, than it turns to the under side of the stalk, and, if disturbed, drops down, and feigns death. I have found the best thing to use was a green gauze bag-net held under the plants, which were then shaken, and the insects fell into it.

Crióceris 12-punctàta *Linn.* is another species of the same genus, which is also found upon the asparagus. In this country, however, it is extremely rare.

ART. II. *Remarks on the State of Gardening, and of Cultivation generally, in Belgium.* By JOHN MADDISON.

THE want of capital is severely felt amongst all classes in Belgium; not that this country is poor, or that there are not many rich individuals inhabiting it, but because the property of each individual with a family is so cramped, that he can hardly be said to be the master of his own money. Amongst gardeners, and the mercantile classes, this appears to be one of the greatest drawbacks to their improving their fortunes: because, should a gardener, for instance, marry a woman with some money or land, if he should happen to have a family, and his wife should die before him, he, as the husband, by the laws of the country, can only take a share of his wife's property, as one of his own children; that is to say, if he has three children, he can only have for his share a fourth part, as soon as the children come of age; at which time each child has a right to demand his part of his mother's property. So that a man with a large family has innumerable drawbacks to prevent him from increasing his capital. The law of division of property, at first sight, appears to be just; but, in reality, it is more injurious than any law of entail; because, let a child be as great a vagabond as possible, he has still a right to his share; and, if he is not satisfied with that share, he has a right to insist that the property should be sold, and the produce be equally divided. Instances of this are occurring every day; and it is rare to meet with an old establishment of plants which has remained in the family for many years. This may be considered as one of the many causes why plants are so cheap on the Continent, where sales are continually occurring: another great reason is, that almost every gentleman, more or less, sells or exchanges his plants, or pays his gardener partly in plants, or allows him to sell his plants. Again, fine old trees, which, in England, are so much the ornaments of estates, and

which have remained on those estates perhaps for centuries, are here almost unknown, except on property belonging to government. The planting of oaks is becoming every day more rare, because the present generation has but little chance of reaping any profit from them except as underwood; whereas poplars (*P.* álba and *P.* canadénsis), which here become large trees in twenty-five or thirty years, are almost universally planted. It is a common practice in this country for the members of the same family, who have an equal interest in the property, to live all together in the old family mansion; by which means an old tree, and a fine establishment of plants, have a chance afforded of continuing a few years longer; but, should a dispute take place amongst the members of the family, both trees and plants run a great risk of being brought to the hammer.

From the mediocrity of people's fortunes in Belgium, it cannot be wondered that gardeners and labourers are so badly paid as they are, and that gentlemen's gardens are kept in such a slovenly state. What satisfaction has a gentleman, in that country, in building a handsome range of plant structures, and heating them by steam and hot water; or in keeping up his garden in the first style of neatness, and employing first-rate artists in the laying out of his grounds; when he knows that, at his death, should he have three or four children, his fine establishment must either come to the hammer, or be neglected for want of funds to keep it up? There is no country, that I know of, where the taste for gardening is so strong as in Belgium; but, instead of the fine collections of plants which ought to be seen, they are, with a few exceptions (such as the orange trees of the Duc d'Aremberg, some of which are very old), really not worth looking at as collections. This is not only the case here, but it is the same about Paris; where, with nearly a million of inhabitants, there is scarcely a passable *private* botanic collection of plants.

Yet, with this law of division of property, are the lower orders better paid, better clothed, better fed or better instructed than in England? The labourer obtains here, in the neighbourhood of Ghent (which may be called the Manchester of Belgium), 10*d.* a day in winter, and 1*s.* per day in summer, without food. In point of clothing, in winter, the English and Flemish labourers are nearly on a par, with the exception of the *sabots*, or wooden clogs, which retard the motions of the Flemings considerably; but which are constantly worn, though the soil is so dry and sandy, that leather shoes (about 2*s.* 6*d.* a pair) would be much preferable. In summer, however, the Flemish labourer dispenses with the use of both shoes and stockings when at work. In point of diet, black bread made of rye, potatoes, buttermilk, with at times the fat of pork spread on bread, instead of butter, is the common food.

In point of instruction, the Flemish peasant's family can neither read nor write; nor do the village priests seem anxious that they should know any thing except what regards their religion. In villages where the burgomaster (mayor) is an enlightened individual, schools are beginning to make their appearance; because in such places the priests cannot have their own way; but, in places where the burgomasters are common farmers, and where, in some places, they can scarcely sign their own names, nothing can be done without the consent of the priests, who are generally opposed to schools.

The peasant here, with a few acres of land of his own, and a cow and pig, may certainly be said, for the time, to be independent; but, as he has generally a large family, his few acres of land, in the event of death, is brought to the hammer, the independence of the family ceases, and they become again day labourers.

The nonpayment of tithes appears, at first sight, to be a great relief to the land; but I am inclined to suppose that the land tax with which the land is charged neutralises the advantage; the difference being merely, that the clergy receive their stipend direct from the government, instead of from the parishioner, whose land and furniture are taxed by government to pay it. Thus, though the odium of paying tithe is saved, in reality there is no saving in money, and the clergyman himself receives his stipend always regularly. The obligation of priests to reside amongst their parishioners, and the neatness of the parsonages, in this country, are well worth imitation in the villages in England; and I am sure, from the liberal education which our clergy receive, that their parishioners would be benefited by it: whereas, here, the inhabitants of the Flemish villages labour under great disadvantages; because their clergymen, being born of poor parents, like themselves, have only an opportunity of receiving a religious education, and are, therefore, by no means adapted to instruct youth, except in such things as immediately concern their religion. True it is, that there are many pious and conscientious men amongst them, but their education prevents them being enlightened men of the world: and we all know that religion alone, without any other qualification, will not do for the present generation.

In a country where the taste for gardening is so great amongst all classes of people, it is astonishing to find so few national publications upon the cultivation of plants. Those that are begun are seldom of long duration; and the *Horticulteur Belge*, a work very well adapted to this country, was, a short time since, very near being given up, from nothing but the idleness and want of spirit manifested by its different conductors. Both the conductors of a botanical publication, and the readers also, appear

here, after a time, to lose heart. The people are either not a reading nation, or the fashion, as yet, has not taken sufficient root to enable a botanical work to answer. There is at present a piratical work at Brussels, named the *Flore Universelle, ou Encyclographie du Règne Végétal*, conducted by the secretary of the Horticultural Society, which contains drawings taken from the greater part of the works published in England. The figures of the plants are by no means well executed; but, from the cheapness of the work, and from the idea it gives of the plants, it is one which ought to answer; and yet, I am given to understand that it scarcely pays its expenses, our Continental neighbours esteeming both plants, and publications on plants, more for their cheapness than for their real merit. The only work that I really know deserves mentioning is the *Bon Jardinier*, published at Paris, by Messrs. Vilmorin and Poiteau; but, as this is published in French, it is a work very little read by the working gardeners in Belgium, who, for the most part, are only acquainted with the Flemish language. The *Bon Jardinier*, as a work for beginners, is inestimable; and no amateur, who has the garden mania in the least degree, ought to be without a copy. The part written by M. Vilmorin, on the agricultural seeds and grasses, is well worth the perusal of any agriculturist. Its fault [which is altogether unavoidable] is, that every year nearly the same matter is published which was published the preceding year.

Between the towns of Courtrai and Menin, and in the environs of Lockeren and St. Nicholas, in the Pays de Waes, the finest flax in Europe is considered to be cultivated; and yet, from want of means, the farmer cannot make the most of it. In the first place, his farm is generally too small to enable him to give his land rest between the different sowings of his flax; and the longer the interval between each sowing of flax, the better is the produce. He can neither afford to procure his seed direct from Riga, which is considered amongst flax-growers as indispensable, nor can he afford to employ machinery to turn his produce into linen. All these circumstances are to the disadvantage of the Fleming, and all arise from the same cause, the want of capital; which want of capital arises, in a great measure, if not wholly, from the laws on property. It is a curious circumstance (and I have every reason to believe that it is true, and, if so, it serves to mark the benefit of large capital to the community in general), that flax purchased in the neighbourhood of Courtrai, by the English merchant, in its rough state, and thence sent to the North of Ireland to be manufactured into what is called Irish linen, will, on its return to Belgium, in the form of Irish linen, sell for less than linen of the same quality manufactured in this country.

The town of Lille, in France, formerly a part of Flanders, is

renowned for its culture of the carnation, called, in the *Bon Jardinier*, *œillet flamand*. At Lille this plant is certainly cultivated in perfection; and, whether it proceeds from the presence of lime in the soil, or from some other cause, I know not; but I have observed that carnations there keep their colours better, and are less liable to sport (as, I believe, amateurs call it), than in any other place. Tulips, and other bulbous-rooted plants, thrive better at Lille than in the neighbourhood of Ghent; though the inhabitants of the former are far inferior to those of the latter city in all other respects, both as amateurs and as professional gardeners. M. De Smet, however, is an amateur whose garden, in the environs of Lille, is an exception to this rule, and is well worth visiting. He is one of those practical amateurs who are but seldom to be found in this country; as his taste for gardening is such, that he looks after the culture of his plants in a great measure himself. M. De Smet may be well styled an *amateur cultivator*, the greater part of our amateurs in plants being amateurs by courtesy, or for the sake of fashion; but, in reality, knowing but little of the practical cultivation of a plant.

The neatness of this gentleman's garden, and the care with which I have observed he cultivates his plants, are a proof of this. His geraniums are grown in a superior style; which is saying a great deal, because few gardeners here understand the management of this tribe of plants. His walks are neatly graveled, and the box edging well kept; and, certainly, the cultivation in the open ground of his rare hardy plants would be a credit to any English gardener.

With the exception of the Diánthus tribe, bulbs, and roses, the Lille gardeners do not shine in any other branch of cultivation; and they are, for the most part, indebted to the English and Ghent gardeners for the stocking of their houses. Meillez was once renowned for his roses; and, had he kept to that culture alone, he would most probably have excelled all others, for his soil is admirably adapted for that shrub; but, since he has paid more attention to other plants, and taken to travel about, and to purchase plants from different gardeners, his roses have been much neglected; and, consequently, there are now many gardeners in France much his superiors in the art of cultivating them. This is the rock on which Flemish gardeners generally split: they think, if they can cultivate one tribe of plants well, they must necessarily be able to cultivate every other kind of plant equally well that they may take a fancy to. It is from this cause that the florist gardeners who cultivate but one or two tribes of plants are so much superior in their cultures to the commercial gardeners, who, perhaps, cultivate at least twenty kinds. To return to M. Meillez: his garden is not

kept in that degree of neatness which it deserves, and which ought to be the first consideration to a professional gardener. His collection of plants is, however, at times respectable, especially after his journeys in Belgium; but, as his best plants are purchased on commission, the practical amateur must not look for culture in his garden, except as far as regards his standard rose trees; with regard to which, he, in common with his countrymen generally, far surpasses the English, both in budding and grafting.

M. Fondeur, a market-gardener at Lille, though at present not high in his profession, is one who is evidently rising in the estimation of amateurs, and who will before long, from his civility and urbanity of manners, be a great favourite in the botanical world. Like all the French gardeners, he cultivates the rose in perfection, and at a very reasonable price.

The gardeners on the Continent, in the same manner as the shopkeepers, have a way of asking for their plants much more money than they will take; which, to English ears, sounds very much like imposition, and which, if not so in reality, I consider as against their own interest; because, should a gardener ask, by chance, a fair price for his plant, the buyer will still suppose that he has asked too much, from it being the practice generally to do so. Many, also, have a foolish way of proceeding, which is, to undersell their neighbours; and would almost give a plant for nothing, rather than their neighbour should sell one instead of themselves. This is, in more than one instance, against their interest; as they not only lose their money by their jealousy, but they cause those from whom they purchase plants to be very shy of dealing with them. Were the Continental gardeners to ask a fair price for their plants, and to come to an agreement not to undersell each other, they would receive much more liberal treatment from the London gardeners; whereas the Continental gardeners do not give encouragement to the London gardeners to treat them well; for, the moment they receive a new plant from London, they endeavour to multiply it as quickly as possible, which, in our fine vegetable soil, is not an affair of much time. It is then sold at considerably less than what it can be purchased for of the original possessor; and, if two gardeners happen to have the same plant, they are not wise enough to sell it at a fixed price, but their jealousy is such, that one of them would let it go for little or nothing, rather than the other should sell it.

The country between Ghent and Antwerp is flat; but, until the traveller arrives at Beveren, there are but few countries to be found of greater fertility. In the neighbourhood of Lockeren and St. Nicholas very fine flax is grown, second only to that in the neighbourhood of Courtrai. This part of Flanders

goes by the name of the Pays de Waes, and is universally admitted to be one of the most productive sandy soils in existence. But, on leaving Beveren to proceed towards Antwerp, the charm immediately ceases; and nothing strikes the traveller so much as the contrast between the opulence displayed on the Ghent side of Beveren, and the destitute misery which is to be seen after leaving Beveren for Antwerp. In the commencement of the year 1830, the country between Beveren and Antwerp was covered with a productive crop. The September following the revolution came, and whole parishes were thrown under water by the cutting of the sea banks; and at present, though the country is somewhat drained from the water, yet it is to be feared that, from the quantity of sand left by the sea, it will be an immense period of years before it can be brought into its former state of cultivation. In looking upon this scene of desolation, one cannot help saying that *revolutions "cost sometimes a little too dear."* The country, also, round Antwerp suffered dreadfully from the occupation of the French during the late siege of Antwerp. The siege taking place in December, the proprietors in the neighbourhood of the citadel were obliged to allow the French soldiers to cut what wood they pleased; and M. Parthon de Von, an amateur, with an extensive garden at Wilryck, had a whole regiment encamped in his park, and the officers to dine every day with him for a month. Had the siege endured one month more, he would not have had a timber tree remaining on his estate; as they had already commenced cutting down his fine avenue. As it was, I understood him to say he lost upwards of 6000 fine trees. True it is that the government repaid him the value of his trees; but all the money in the world cannot restore the beauty of his park. His garden and pleasure-grounds, which are laid out partly in the French and partly in the English style, contain some fine shrubs and timber trees. The garden is surrounded by a grove of large sweet chestnuts and beech trees, the greater part being upwards of 12 ft. in girt, and from 60 ft. to 80 ft. in height. It is planted in the French style, and is an excellent screen to his garden from the high winds. The park, in which the French regiment was encamped, contained many large trees; but it is now little more than an open plain. If M. Parthon was sure never to be again visited by the French, I know of no place better adapted for an arboretum: but to plant rare trees in the neighbourhood of a citadel would be rather too dangerous a plan to pursue. His garden contains some very fine specimens for a country where property changes hands so often. He has also a small pinetum; and his American, or rather peat-earth, shrubs thrive very well. Among these I observed the true *Rhododéndron* ferrugíneum flòre álbo; a *Lílium* supérbum, 8 ft. high, with 42

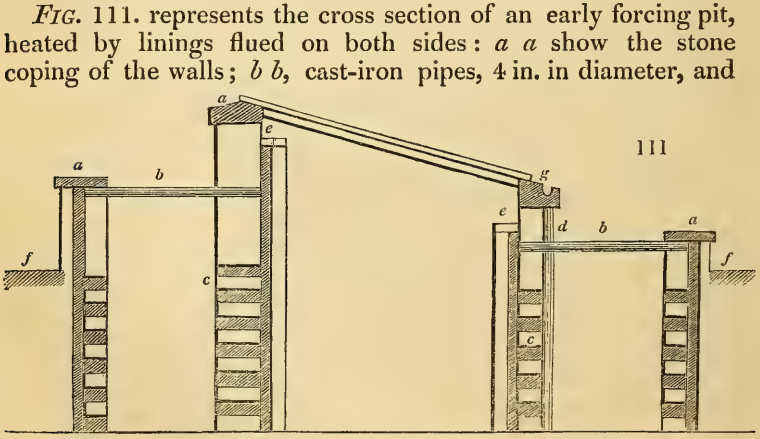
flowers; a Gladìolus Dallèni, which had passed the winter in the open ground; a Portugal laurel, 20 ft. high (rare for our severe climate); *A*bies scándens, 30 ft. high; a weeping lime; and a Gledítschia triacánthos, diameter of trunk 2½ ft., height 20 ft., and with thorns 13 in. long. The plant-houses contain a good collection of Orchídeæ, lately received from M. Van Houtte, his collector in Brazil; but, as the greater part have not yet flowered, it is impossible to know much of them, except that they are new kinds. In the green-house there was a very fine specimen of Scóttia angustifòlia; and the borders of the open ground contained a very respectable botanical collection of hardy plants, and a select collection of English dahlias. As an amateur, M. Parthon de Von spends much of his time in his garden, and looks after the cultivation of his plants himself. His gardener has lived with him for many years, and is, therefore, habituated to his master's ways. It is well worth while for both amateur and gardener to visit M. Parthon de Von's collection of plants, as they are sure to meet with a kind reception from the master, who is always willing to exchange his plants with his neighbours, for the mutual benefit of both parties.

The only gardener of any note at Antwerp is M. Van Geest, who has a fair collection of herbaceous plants, and some plant structures: but Antwerp, as well as all the other Belgian towns, is much behind Ghent in taste for horticulture.

Wondelgheim, near Ghent.

ART. III. *Description of an early Forcing Pit, and a Boiler for an early Forcing Stove, erected at Oakhill Gardens.* By A. FORSYTH.

FIG. 111. represents the cross section of an early forcing pit, heated by linings flued on both sides: *a a* show the stone coping of the walls; *b b*, cast-iron pipes, 4 in. in diameter, and



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6 ft. apart, connecting the steam flues; *c c*, cavities in the brickwork through which the hot air and steam pass from the

linings into the steam flue; *d*, cast-iron pipes, 3 in. in diameter, conducting the water from the gutter into the drain; tending, also, to strengthen the front wall and support the coping, by being placed under every third rafter; *e e*, tile covers to the steam flues, with brass plugs, like those used in leaden water-troughs, 2 ft. apart; *f*, ground level; *g*, coping of the front wall, which serves also as a gutter. This groove, or gutter, need not be large, as the column of water cannot be great collected from a light and a half, the receivers being placed under every third rafter.

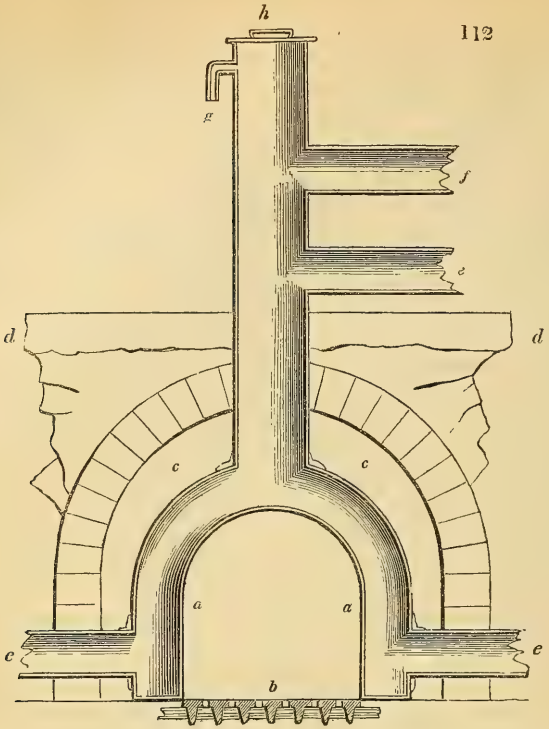
The cast-iron pipes introduced here, to connect the steam flues, are intended also to support planks 3 in. thick, closely fitted together, which are to be used in summer, as a walking way, and to hide the then almost useless lining pits: but I would by no means use them in winter, as it would prove injurious, by causing the condensed steam to drip upon the linings, thereby rendering it too wet for proper fermentation; besides, the linings, in winter, ought to be made up as high as the bottom of the coping-stone, to prevent the weather from acting upon any part of the walls of the pit; not to mention the unnecessary waste there would be of the planks by being rotted by the steam from the linings.

Where pits are placed so near each other that a lining can be made to act upon the back of one, and upon the front of the other, great benefit would be derived by having these connecting pipes and stoppers; since, by shutting one series and opening the other, the steam might be conducted into other pipes at pleasure. For example, the steam that would destroy the crop in the early cucumber or melon pit, might be conducted into the early fruiting pine pit, where the long-bearded (long-scaled) and hide-bound appearance of the winter swelled fruits, and the thirsty look of the half-succulent leaves, show that they are famishing under a high and dry temperature, for want of congenial atmospheric food.

The pit above described, when erected here (which I have no doubt it will soon be), if constructed of neat cast-iron rafters, and good sashes, made of the best yellow deal, with a couple of cast-iron hot-water pipes, 3 in. in diameter, over the steam flue in front, will be found to surpass any structure of the kind already in our gardens.

For a hot-water apparatus, I would recommend one of that description erected by Mr. Fowler of Temple Bar. Having worked several apparatus erected by persons eminent in the advertising column, I should prefer this, as being preeminent in symmetry and simplicity.

Fig. 112. is a section of a boiler erected here by Mr. Fowler, for an early forcing stove, having three rows of pipes all round: *a a* show the fireplace; *b*, the grating; *c c*, arched flues over the



boiler; *d d*, stone pavement; *e e* are pipes which go all round, make an elbow joint, and return to the boiler; *f f*, pipes which go only once round; *g*, waste-pipe; *h*, lid of the boiler.

This boiler is now stable and efficient, after seven years' trial, whilst another apparatus, erected here by one whom you seldom fail to praise, has been twice built, and ten times out of repair, in one year.

Isleworth, January, 1836.

ART. IV. *On the Growth of the Pine and Fir Tribe in exposed and stormy Situations.* By JOHN NUTTALL, Tiltoun, Mount Kennedy, County Wicklow.

I HAVE observed that almost all the *Abiétinæ*, when planted in the wild grassy clay state and schistose soils of my property and the adjacent lands, grow too fast (if I may so express it), or out of proportion with their rooting, and become top-heavy and wind-waved [waved, or blown about, by the wind, so as to lean to one side]; and also that those which, by accident or otherwise, had lost their heads, took deep root, and quickly grew up healthy

plants, in despite of the received, but erroneous, opinions of many Irish gardeners, that, when any species of pine or fir lost its leader, it could not become a good timber, or even ornamental, tree. I therefore commenced a series of experiments, as follows: — Each spring, or beginning of summer, when the buds appeared nearly developed, I went over all those plants which suffered from the causes before mentioned, and broke off all their buds, except those on short branches; it being a prime wish to have well balanced, and, consequently, trees of beautiful symmetry, which invariably withstand firmly their common assailant, the south-west wind, which prevails here the major part of the year.

By the above process, their upward growth is checked immediately, the bole, or stem, increases in bulk, and the plant roots in the manner desired; new buds are formed the same season, and the following year they recover their healthy aspect.

Larches I have had cut down to a strong lateral shoot on the windward side. These lateral shoots soon become good leaders, and the plants ultimately fine trees. It may be necessary to add, that the disbudding extends only to *Abiétinæ* which have their leaves in twins, &c.; such as *Pinus sylvéstris*, *P. Larício*, *P. ponderòsa*, *P. Cémbra*, *P. rígida*, *P. Pináster*, and *P. marítima*.

The silver fir does not bear transplanting well, and usually produces only three buds on the extremities of its leaders, the year following that operation. The buds produce imperfect leaders; and I have had them cut out from time to time, until five buds are generated, the number requisite for a perfect "whorl;" then each plant throws out the proportional number of arms annually which are necessary for a proper equilibrium. Such plants are certain of overtaking their competitors in height and bulk, frequently outgrowing them in congenial situations. Rival heads I have cut out year after year; and thus most beautiful pyramidal trees are exhibited, feathering to the ground where protected from all animals.

The spruces, when necessary, which is seldom, I subject to similar treatment as the pines and silver fir, with like results. The Lebanon and deodar cedars, and also the hemlock spruce, thrive very well here, but do not manifest that luxuriancy and rapidity of growth which the others do; they demonstrate, however, that they can be well "acclimatised" in the valleys of the Wicklow mountains; which valleys are elevated about 800 or 1000 feet above the level of the sea; whilst the mountains rise from 1500 ft. to nearly 3000 ft., over which, to use a sea phrase, the clouds are generally "scudding," and the temperature of the valleys lowered considerably.

It may be well to state, that I have remarked that all the resinous trees escape uninjured during thunder storms, whilst

the deciduous ones are sometimes struck by lightning; which inclines me to believe that they are non-conductors. If correct in this, the fact affords another proof of the wise and admirable dispensation of the Author of nature; viz. that trees exclusively alpine should thus be guarded so beautifully against so potent an element as lightning. All the species of *Abiétinæ* will grow in the lowlands, but, assuredly, will not flourish; for it is only in uplands, among rocks, and in soils not calcareous, that these most graceful specimens are to found.

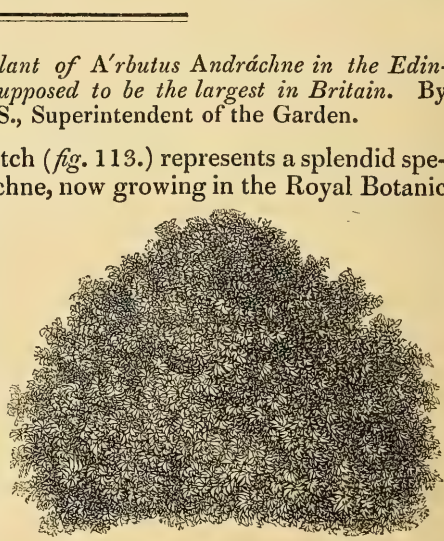
The *Pinus marítima* is in its infant state with me; and I have curtailed its heavy head, which did not appear capable of keeping erect: yet it is very hardy, and might probably be an acquisition to those whose properties lie contiguous to the sea, as I learn it grows near Bordeaux, and other places on the margin of the Bay of Biscay.

I annex a list of the rarer pines which thrive here in a superlative manner, presenting that wholesome colour and general aspect, which at once indicate that they are in a soil and climate perfectly congenial.

Pínus Larício.	*Pinus rígida.*	*A'bies álba.*
Pallas*iàna.*	*Cémbra.*	nìgra.
caramánica.	*A'bies* Douglàs*ii.*	*Làrix péndula.*
ponderòsa.	*Píchta.*	microcárpa.
pumílio.	Fràser*i.*	*Cèdrus* Libàni } grow
Banks*iàna.*	rùbra.	*Deodàra* } slowly.

ART. V. *Account of a Plant of A'rbutus Andráchne in the Edinburgh Botanic Garden, supposed to be the largest in Britain.* By WILLIAM M'NAB, A.L.S., Superintendent of the Garden.

THE accompanying sketch (*fig.* 113.) represents a splendid specimen of *A'rbutus Andráchne*, now growing in the Royal Botanic Garden at Edinburgh, believed to be the finest plant of the kind in Britain; and it is said that Ireland cannot produce its equal. The large plants at Culzean Castle, in Ayrshire, said to be the *Andráchne*, are of the *A. hýbrida*. The exact age of the plant cannot be ascertained; but it is supposed that it cannot be less than from 30 to 40 years old. It was brought from the old Botanic Garden at Leith Walk, and planted in its present situ-



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ation in 1822. Neither can it be ascertained if it has been a seedling or a budded or grafted plant. It seems probable, however, that it has been a seedling, as no appearance of either bud or graft is observable above the surface of the ground. This species seems quite as hardy as the common *Arbutus Unedo*, or, indeed, any other hardy evergreen, as it has never been the least injured by our severest winters. It has occasionally produced a few apparently ripe fruit, but none of the seeds have yet been got to germinate. It is grown in a dry situation, and in a light sandy soil. The centre of the plant is about 8 ft. south from a wall 14 ft. high. The size of it, when planted in its present site, on the 30th of September, 1822, and its size on the 30th of September, 1836, are given below: the sketch shows its present shape and size.

	Sep. 30. 1822.	Sep. 30. 1836.
Height of the tree from the level of the ground -	13 ft.	- 19 ft.
Diameter of branches from east to west - -	16 ft. 6 in.	- 23 ft.
Diameter of branches from north to south - - -	9 ft.	16 ft 6 in.

The head is formed from three principal branches, which separate close to the surface of the ground. The largest of these, on the 30th of September, 1836, was 3 ft. in circumference; the second, 2 ft. in circumference; and the third, 1 ft. 11 in. in circumference.

Royal Botanic Garden, Edinburgh, September, 1836.

ART. VI. *A Mode of transplanting a large Cedar Tree described.* By J. CUTHILL, Gardener to Capt. Trotter, Dyrham Park.

IT is twelvemonths ago since I moved a very fine cedar tree, 30 years old and upwards, from 18 ft. to 20 ft. in height, 2 ft. in circumference at 1 ft. from the ground, and 48 ft. round the extremities of the branches. The reason why it was moved was, that it stood in front of where the conservatory was building. In order to accomplish such a difficult task, I cut the roots 4 ft. from the stem all round to the very bottom, in the month of April, in order to get young fibres to support the ball, and also for securing the life of the tree. In the month of November following it had made roots 6 in. long; and I must candidly say, that, had the roots not been cut, the tree, in all probability, would have perished. Now, the cutting is one of the two principal points in transplanting large evergreens; and the next large one I have to move I shall cut it two years previous to shifting. The next principal point is the making of the puddle for planting in. The mixture ought to be made so thick, that the ball will make its way to the bottom of the puddle in the course of a very few days. It next cements with the ball, and, of course, excludes the air, and makes all as firm as if it had not been moved; and, from

my little experience, I consider firm planting, let it be tree or vegetable, as one thing above all others that ought to be particularly attended to. One other point which we have to guard against, is the wind: the best plan I have ever found is to join cross pieces of wood, enclosing the stem of the tree, and at each end a post driven in to the depth of 3 ft., and the top firmly nailed to the cross pieces. If this is properly done, no wind can overturn the tree. The wood-work can be covered over so that it will not look unsightly.

Dyrham Park Gardens, November 12. 1836.

ART. VII. *List of Plants which have stood the open Air at Pendarves, in Cornwall.* By JAMES MITCHINSON, Gardener.

PERHAPS it will be interesting to some of your readers to know the plants that have stood the winter here in the open air, as they are those that are most hardy of the plants generally grown in green-houses, &c. The following are such as have been out of doors for several winters: — Fuchsias, nearly all the varieties, or at least about sixteen; *S*álvia cardinàlis, *S.* Grà-ham*i*, *S.* involucràta, and *S.* angustifòlia; calceolarias, several varieties, both herbaceous and shrubby; Richárd*ia* æthiópica; and Eriócoma fràgrans. *C*ánna índica dies down in winter, but comes up quite strongly every summer, and flowers and produces its seeds. Coronílla glaúca and valentìna, *P*olýgala speciòsa and *m*yrtifòlia, Thunbér*gia* coccínea, against a south wall, three winters: the last winter it was cut down with the frost, but sprang again quite strongly from the roots; as did also a plant of *H*eliotròpium corymbòsum, against the same wall: each of them had a little litter put round the roots. *A*ristolòchia sempervìrens and Calceolària *a*rachnöídea have been for two winters in the stump of a hollow tree, about 4 ft. from the ground, without any injury. Tradescánt*ia* crássula also grows freely: it dies down in winter, but comes up strongly in spring.

The Bouvárd*ia* triphýlla, *H*elichrỳsum *S*tœ̀chas, *e*ricöídes, and fœ́tidum (the latter sows itself, and becomes almost a weed), Aloý*sia* *c*itriodòra, *A*nthýllis Hermánn*ia*, Eriobótrya japónica, Cinerària *p*opulifòlia, *S*axífraga sarmentòsa, *C*hrysócoma Comaúrea, Melaleùca *h*ypericifòlia, *A*càcia armàta and dealbàta, Meliánthus màjor, Passiflòra cærùlea-racemòsa, *Técoma* grandiflòra, against a south wall; *A*́ster argophýllus, 10 ft. high, quite hardy; *C*lèthra arbòrea, *Petùnia* nyctaginiflòra and *P.* phœnícea, *H*ypéricum baleáricum, Dracæ̀na fràgrans, three years, having a mat thrown over it in severe frosts, 7 ft. high; Brugmáns*ia* suavèolens, south wall. Camellias are quite hardy, but do not flower so well out of doors as could be wished, except

the double white and striped red, and one or two others: the latter do very well. Corræ*a* álba is quite hardy. Edwárds*ia* grandiflòra and microphýlla, *Mí*mulus glutinòsus, *O*nònis *N*àtrix, and Commelìn*a* tuberòsa, will remain in the ground without injury. Leptospérmum, three sorts, quite hardy; Pittósporum *Tobìra* and undulàta, Acmèn*a* (Metrosidèros) floribúnda, *C*eanòthus africànus and azùreus, *J*asmìnum revolùtum, *Yúcca a*loïfòlia, Melástoma Fothergílli, cut down last winter, but has come up again quite strongly, and is now 4 ft. high; Duvaú*a* depéndens, undulàta. &c.; *T*eùcri*um* latifòlium and suffruticòsum; with many other things, that would take up too much room to mention. The Eùcomis punctàta is hardy, and has been out in the borders many years. *E*chium cándicans, I am sorry to say, was killed last winter; but there are several seedlings come up in the place where it grew.

We have some fine Portugal laurels here, three or four of which are from 25 ft. to 30 ft. high, and cover a space of from 40 ft. to 50 ft. in diameter with their tops; also a large plant of the Taxòdium dístichum, 30 ft. high. The stem is 15 in. in diameter at 1 ft. from the ground.

Pendarves, Oct. 8. 1836.

ART. VIII. *On the Rust on Vines.* By JOHN M'EVOY, Gardener, Lewston House, near Sherborne, Dorsetshire.

SEEING, in p. 263. of the present Volume, remarks by J. Wighton, on the rust on vines, I am induced to offer my humble opinion on the probable cause. I fully agree with your correspondent, that the disease is often caused by "friction." Indeed, if we examine a working gardener's hands with a microscope, we need not be surprised that the berries present the scabrous appearance that they so often do. I have frequently seen a man catch hold of a bunch as if he were going to tie a head of cabbage. I do not consider that your correspondent has proved so satisfactorily as he imagines that the presence of the head gardener is either the preventive or the cure; for, in very many situations (and this is one of them), the head gardener's attention is called to the plantations and the farm; or, as is frequently the case here in the spring months, a dozen different tradesmen are waiting for his advice or directions; the neglecting of which, and the plea that he was preventing by his presence the rust on his vines, would be a weak excuse, and unworthy of the observant gardener.

The fact is, I have often observed it more frequent on the early than on the late vines; and I will endeavour to account for it. In the months of March and April, forcing-houses are getting forward in many places; and, as we have at this season

frequently very hot sunshine, accompanied with keen and cutting winds from the north-east, and as ventilation, in most establishments, cannot be effected without the direct entrance of the cold air, the person in charge of the forcing-houses contents himself with steaming the flues, paths, &c., which causes dense vapours to settle all over the surface; and the rays of the sun coming to a focus on the globules of vapour settled on the berries, as they pry, causes the parts so acted on to blister or rust.

Vines should never be closely stopped in warm weather. Head gardeners should particularly impress on their men the necessity of washing their hands previously to thinning grapes; to avoid brushing their head against the bunches, as the unctuous matter from the hair is pernicious; nay, I consider the breath coming in close contact with the berries sullies their brilliancy. A method we have adopted here is, that of having a piece of wire, 6 or 8 inches long, with one end hooked, by which the main stem of the bunch is caught; and, by gently elevating or drawing it right or left, the bunch can be thinned without a berry being touched by the hand. The necessity of very frequently wiping their scissors should also be impressed on the grape thinners.

Would it not be also advantageous to provide each man with a pair of smooth leather gloves, to be used only when thinning grapes? which, if carefully put by after each season, would last for an indefinite length of time.

Lewesston House Gardens, Sherborne, Dorsetshire,
June 10. 1837.

ART. IX. *On the forcing of early Cucumbers.* By JOHN WIGHTON, Gardener to Lord Stafford at Cossey Hall.

ONE great complaint among the growers of early cucumbers is, that the plants are often weak and yellow. This is occasioned by the beds being kept too warm, and too much covering being placed over them at night. The heat of the beds causes the plants to grow too fast for the small supply of light which they receive while the days are short; and which are rendered shorter still by the coverings being put on so early in the evenings, and left on so long in the mornings. I have always found that so much covering was rather injurious than beneficial. My practice is to cover up only in very cold weather, and then only with a single mat.

Crown glass should be used for very early forcing, and the surface should not be puttied. The glass in old lights is, like horn, almost impervious to the light.

In mixing up the soil for cucumbers, fresh dung should be

used, and it should be allowed to rot in the soil. The common method of employing rotten manure is bad, because in that state the strength of the dung is already exhausted.

The old notion is still prevalent, that it is best to sow old seed, because plants raised from new grow too vigorously. There is no sense in such a prejudice: my own invariable practice is to choose new seed.

The usual method of putting three plants into one pot is also wrong. My plan is to put only one, and one plant only under a light. One good plant will fill the space of a light sooner than three set together.

It often happens that the plants are drawn up, as it is termed; having long stems. This has been attributed to the want of air, and to the plants being too far from the glass. But it arises, in reality, from there being too much heat in the bed below; for the plants never grow so, however far removed from the glass, and scantily supplied with air, if there be not too much under-heat.

Cossey, Feb. 10. 1837.

ART. X. *On the Culture of the Turnip.* By A. FORSYTH.

THE early white Dutch and early Stone are generally preferred; but the genuine Aberdeen yellow (golden yellow, or Maltese golden) is the hardest, the hardiest, and most sugary of any sorts I have ever seen. Times of sowing may be about March 25. for an early summer crop; May 15. for autumn supply; July 1. for a main winter stock; and Aug. 12. for the latest, or spring, crop. In sowing, suppose the ground to be in ridges, 18 in. wide, and some well-rotted dung introduced between them; and, after digging every ridge separately, cover the dung about 2 in. deep, pass the roller over the whole, then make drills, and sow the seeds right over the ridge of dung, burying them not more than half an inch deep. As the plants come up, let them be dusted with powdered lime, to prevent injury from insects; and when they show their rough leaves, let them be thinned to about 3 or 4 inches apart in the rows, and afterwards thinned for use to 6 or 8 inches. At the approach of drought, frost, or snow, some may be dressed to 1 in. of top, leaving the root entire, and crowded side by side in dry tan, sand, or soil, in any open shed, or awning, where they will continue sound and serviceable for a considerable time.

Isleworth, Feb. 18. 1837.

ART. XI. *Hints on raising Asparagus.* By JOHN WIGHTON, Gardener at Cossey Hall.

ASPARAGUS, grown in the gardens of private gentlemen, is often inferior to that raised by market-gardeners. The superiority of the latter is caused by the greater richness of the soil in which it is raised. Market-gardeners being under no control of masters, generally spare no expense in enriching their soil; and their beds are more frequently renewed. But gentlemen's gardeners, not being always free to act as they judge most proper, are often without the means of improving the soil; their beds are frequently old, and the soil in them exhausted; when new beds are made, from the want of more materials, they are generally formed in the same way which prevailed fifty years ago. The soil is made good about 2 ft. deep, and laid out in beds 4 ft. wide, with paths 2 ft. wide between them; the plants being set in rows 1 ft. asunder. Treated in this manner, no asparagus will be fit to cut before three years; and by that time the beds will have become a mass of roots, and two or three years afterwards the soil will be exhausted.

To raise large asparagus, the soil should be made good to the depth of 5 or 6 feet; then laid out in beds from 4 ft. to 6 ft. wide, with paths between them of the width of 2½ ft. The plants must be put in 2 ft. apart, and the stems not allowed to approach each other much nearer than 2 ft.; or beds 3 ft. wide, with one row of plants down the centre, and the plants 1½ ft. asunder in the rows, would be preferable. It is a very common error to allow too many stalks to grow close to each other. If this be permitted, however good the soil, the asparagus is sure to be small; as the stalks, when so close, draw upon each other. Weak and small stems produce invariably weak asparagus; for it is at the bottom of these that the asparagus springs.

Happening, lately, to take up some asparagus, which had been planted five years, I found the roots at the depth of 6 ft., in a poor sandy soil.

Cossey, Feb. 10. 17.

ART. XII. *On the Culture of White and Red Cabbages, Savoys, and Brussels Sprouts.* By ALEXANDER FORSYTH, Gardener.

WHITE Cabbages. — The only sort I should cultivate for culinary purposes are, early York, early Battersea, and sugar-loaf; not that any of the other varieties are faulty, or inferior, but unnecessary; since these, if well grown, will bring a succession equal to any reasonable demand. The seeds should be sown in August (say 12.) for the cabbages to come to table

in May: other seed should be sown at Candlemas (Feb. 2.), under some slight protection, or in some warm and well-sheltered nook, for a summer and autumn supply; and other seed should be sown at midsummer, to come in as coleworts, for winter and spring.

The ordinary way is to sow broad-cast, and plant out with the dibber; sowing in drills, 9 in. apart, is preferable, as the plants can be hoed about, and earthed up, which will forward those sowed in spring, and protect the autumn ones from winter injury. In planting, I should chop out a trench, by line, as the digging proceeds; and, after introducing the dung, place the plants, previously watered and dug up (not pulled up), in it, deep enough to have their leaves just above ground. If the soil is too dry, it will be better to water the dung in the trench about the roots of the plants before covering it in; as the same quantity of water will then have three times the effect that a surface watering would after the rows are finished. The plants may stand 18 in. apart from row to row, and 9 in. apart in the row. If large cabbages are wanted (which is very seldom the case), every alternate plant may be used for coleworts; the rest will then stand to form heads at 18 in. apart every way. The ordinary routine culture of cabbages need not be enlarged on, as every gardener knows that they require earthing up as they advance, and frequent hoeings, &c.

Red Cabbages. — The red Dutch and dwarf red are the best varieties; but it is often difficult to get the sorts pure. As the plants, however, are easily distinguished when young, there is no excuse for planting bastard varieties. Sow about the 12th or 20th of August, in fresh poor soil, as directed for white cabbages. In March, or early in April, plant out, in richly manured land, in rows 2 ft. by 18 in. For the manner of planting, see *White Cabbages.*

Savoys. — The large yellow, the dwarf yellow, and the green savoy are all useful; yet the dwarf yellow alone may successfully meet every reasonable demand for this article. Sow in February, in drills, as directed for white cabbages; and, as the plants advance (say when 4 in. high), let them be transplanted to the same distances, &c., as directed for red cabbages.

Brussels Sprouts. — Brussels sprouts may be transplanted into rows 2 ft. by one: in every other respect they are treated like savoys, and, therefore, need not be enlarged upon in this place. Mr. Morgan (*Hort. Trans.*, vol. ii.), quoted in the *Encyc. of Gardening*, says that the Brussels sprouts are not sufficiently hardy to last through the winter in England; but I never saw them killed by frost, either on this side of the Tweed or on the other.

Isleworth, Ash-Wednesday, 1837.

ART. XIII. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

Maund's Botanic Garden, or Magazine of Hardy Flower Plants cultivated in Great Britain; in monthly numbers, each containing four coloured figures in one page; large paper 1*s.* 6*d.*, small 1*s.* Edited by B. Maund, Esq., F.L.S.

The Floricultural Magazine and Miscellany of Gardening, edited by Robert Marnock, Curator of the Botanical and Horticultural Gardens, Sheffield. In monthly numbers, 6*d.* each.

RANUNCULÀCEÆ.

1599. DELPHI'NIUM 14154 intermèdium
var. *pállidum *Lindl.* pale-*blue* ♃ △ or 7 jl B ... 1836 D co Bot. reg. 1969.

"It grows 7 ft. high in rich ground, with a firm stem of a delicate glaucous green. Its leaves are thin, and destitute of the smallest trace of hairiness; while its long branched racemes of nodding sky-blue flowers give a most graceful appearance to the termination of the branches." (*Bot. Reg.*, July.)

Malvàceæ.

2004. *MA'LVA*
**concinna* *Knowl. & Westm.* neat ♃ □ p.r 5 ap.jn L S. America 1835 C s.p Flor. cab. 38.

Raised from seeds received by Mrs. Charles Shaw of Birmingham, from South America. "A pleasing addition to that already numerous genus." (*Flor. Cab.*, July.)

Balsamíneæ.

698. IMPA'TIENS
**scapiflòra* *Heyne* scape-flowered ⁂ □ or ¾ au L East Indies 1835 S r.m Bot. mag. 3587.
Synonymes: I. bulbòsa *Moon Cat.*; I. acaúlis *Arn.*

" It has seldom," says Sir W. J. Hooker, " been our good fortune to figure a more interesting plant than the one here given; or one that, at first sight, would appear less to belong to the very natural genus of which it is, in my opinion, undoubtedly a member, — Impatiens." Sent by William Nimmo, Esq., from Bombay, in 1835.

Leguminòsæ § *Papilionàceæ*

2071. PSORA'LEA
*orbiculàris *Lindl.* round-*leaved* ♃ △ or ½ jn.jl P California 1835 R p.l Bot. reg. 1971.

" A hardy herbaceous plant, with long, tough, slender, creeping stems, from which the leaves spring upon stalks about 6 in. long. It is remarkable for the numerous dark glands, which are mingled with soft hairs, all over its surface, and which resemble the kind of nails which upholsterers call tacks." (*Bot. Reg.*, July.)

1964. *CY'TISUS*
*racemòsus *Marnock* raceme-*flowered* ♣ or 3 my.jn Y ... ? 1835 C p.l Flor. mag. 18.

A hardy shrub, of moderately robust habit, forming a handsome bush, 3 ft. or upwards in height; first introduced by Messrs. Young of Epsom. (*Flor. Mag.*, July.)

1962. *SPA'RTIUM* 17468 *júnceum*
*odoratissimum *D. Don* ♣ or 4 jl.s Y Persia 1834 S co Swt. Br. fl.-gard 390.

A spreading branching shrub, with long, filiform, rush-like, green branches; the younger ones silky. This variety is distinguished by its more slender and spreading habit, more silky leaves and shoots, and smaller fragrant flowers. Raised by the Rev. Mr. Duke of Lake House, near Salisbury, from seeds stated to have come from Persia. (*Swt. Br. Fl.-Gard.*, July.)

17468*a* *acutifòlium *Lindl.* sharp-leaved ♣ or 6 jl.s Y Turkey 1836 S co Bot. reg.

Whether this is more than a variety of the Spanish broom, Dr. Lindley cannot say. It was raised in the garden of the Horticultural Society, from Turkish seeds. The leaves are not only longer and taper-pointed, instead of being rounded at the point, but the racemes are more lax, and the manner of growth far more graceful; otherwise it is like the Spanish broom. (*Bot. Reg.*, July.)

Rosàceæ § *Potentílleæ.*

1528. POTENTI'LLA 13645*a* glandulòsa
var. *2 incisa *Lindl.* cut-*leaved* ♃ △ cu 2 jn Y California 1835 D co Bot. reg. 1973.

" A hardy herbaceous plant, introduced by the Horticultural Society from California. It is not a horticultural plant, being too weedy to offer any reasonable probability of being improved by culture; but it is interesting to botanists, as an evidence of the extent to which species vary permanently in their wild state." (*Bot. Reg.*, July.)

Compósitæ.

2415. COREO'PSIS
22016*a* lóngipes *Hook.* long-stalked ○ e.l 2 ma.au Y Texas ? 1835 S co Bot. mag. 3586.

Sent by Mr. Drummond from Texas. In general habit, it comes nearest to C. tinctòria and C. Atkinson*iàna;* and is, perhaps, intermediate between them and C. verticillàta. It appears to be annual or triennial, and flowers in the open border in the autumn. (*Bot. Mag.*, July.)

*Lobeli*àceæ.

*SIPHOCA'MPYLOS *D. Don.* SIPHOCAMPYLOS. (From *siphōn*, a tube, and *kampulos*, curved; in allusion to the curved tube of the corolla.)
*bicolor *D. Don* two-coloured pr 3 ap R and Y Georgia 1835 C s.p Swt. Br. fl.-gard. 389.

Raised by Messrs. Lowe and Co., from seeds collected in Georgia, United States, by Mr. Alexander Gordon, a zealous botanical collector, to whom we are indebted for the elegant Gardoquìa Hoóker*i*. The plant is hardy, of vigorous growth, and produces abundance of beautiful scarlet and yellow flowers. (*Swt. Br. Fl.-Gard.*, July.)

Campanulàceæ.

607. CAMPA'NULA
*muràlis *Maund* wall ♃ ⎯ p.r ½ s B S. Europe 1835 R co Maund Bot. gard. 603.

Called Portenschlag*iàna* by Römer and Schultes. When kept in pots, a mixture of peat, loam, and sand, with abundance of drainers, is very congenial to its growth. (*Bot. Gard.*, July.)

*Gesner*àceæ

1698. GE'SNER*A*
*elongàta *Humb.* elongated ♃ □ or 2 s S S. America 1835 C p.l The Botanist, 27.

A plant of this species, 2 ft. high, flowered, in September last, in the stove of Messrs. Pope of Handsworth, Staffordshire. Several British cultivators imported this species from the Continent in 1835. (*The Botanist*, July.)

Ericàceæ.

521. AZA'LEA var. Seymoúr*i* Herb.

Raised from a plant of *R*hododéndron *R*hodòra impregnated with the pollen of *R.* lùteum. (*Bot. Reg.*, July.)

The flowers are of a pale yellow or straw colour, slightly tinged with purple. (*Bot. Reg.*, July.)

Labiàtæ.

1681. *TH*Y'MUS
*azùreus *Maund* azure ♃ or ½ jn P S. Europe ? 1830 C co Maund Bot. gard. 604.

This species spreads closely over the surface of the soil: it partakes of the perfumes of its congeners, and continues in flower several weeks. It merits a place in every collection of alpines, whether kept in pots, or cultivated in a compartment adapted to the peculiar wants of this class of plants. (*Bot. Gard.*, July.)

Orchidàceæ.

BOLBOPHY'LLUM
*saltatòrium *Lindl.* dancing ⚷ △ p.r ½ d R Sierra Leone 1835 D p.r.w Bot. reg. 1970.

"It is worthy of remark, that in all this genus Bolbophýllum the spiral vessels are particularly tough and numerous." (*Bot. Reg.*, July.)

2568. EULO'PHIA [Bot. reg. 1972.
*macrostàchya *Lindl.* long-spiked ⁂ ⍁ e.l 2 jn.d Y. spotted with R Ceylon 1836 R p.l

" A handsome species of this extensive genus, inabiting shady woods in Ceylon, whence it was sent to the Horticultural Society some years ago, by Mr. Watson, the superintendent of the Botanical Garden at Peradenia. It is one of the easiest of orchidaceous plants to cultivate, and produces its graceful racemes of green and yellow flowers abundantly towards the latter part of the year. They go on growing and producing fresh flowers till Christmas." (*Bot. Reg.*, July.)

Orchidàceæ § Epidéndreæ.

Hartwèg*ia*. A new genus of Mexican Orchidàceæ, received by the Horticultural Society from the neighbourhood of Vera Cruz, where it was found by Mr. Theodore Hartweg, after whom, as the original Hartwèg*ia* proves to be nothing but Chlorophýllum, Dr. Lindley has named it.

REVIEWS.

ART I. *Transactions of the Horticultural Society of London.* Second Series. Vol. I. Part V. 4to. London, 1833.

(*Continued from* Vol. XII. p. 436.)

53. *On the Culture of the Potato.* By T. A. Knight, Esq., F.R.S., President. Read March 19. 1833.

" I HAVE so often addressed communications to this Society upon the culture of the potato, that many of its members may not improbably think that more than a sufficient extent of the pages of our transactions have been already devoted to that subject. It would certainly not be difficult to find one more entertaining; but, if the farmer can be made to derive such information from our transactions as will enable him to cause the same space of ground which now affords one bushel of potatoes to afford two, and the peasant to cause the half acre, which now supplies his table with potatoes, to afford him in addition a considerable weight of animal food, few subjects can be more important; and, therefore, conceiving myself to be prepared to communicate some further useful information, I venture to address another communication upon the same subject.

" The fact that every variety of potato, when it has been long propagated from parts of its tuberous roots, becomes less productive, is, I believe, unquestionable. I have often witnessed the progressive decay of vigour and the different effects of the influence of age, upon many different varieties. The quality of some has remained perfectly good, after the produce in quantity has become highly defective; whilst in others that has disappeared with the vigour of the plant. I brought to this place a single tuber of Lankmann's potato soon after that was imported: the produce of that variety was then, and continued during some successive years, very great; but its vigour was gradually diminished; and in the last year its produce was at least one third (more than seven tons per acre) less than I obtained from the same soil, and under, in every respect, the same management, from other varieties of nearly similar habits, but which had recently sprung from seed. The propagation of expended varieties, therefore, appears to me to be one of the causes why the crops of potatoes generally have been found so much less than those

which I have stated to have been produced here. I have received letters, within a few months, from persons in different parts of the kingdom, informing me that they have been unable to obtain by any mode of culture above 250 or 300 bushels of potatoes from an acre of good and well-manured ground. I have in answer desired to know the age of the varieties cultivated; but upon that point I have uniformly found my correspondents totally uninformed; communicating to me, however, the important intelligence that the same varieties bore more abundantly at a former period, and often that the quality of the former produce was superior. When I first stated, in a former communication, that I had obtained a produce equivalent to 670 bushels of 80 lb. per acre, I found some difficulty in obtaining credit for the accuracy of my statement, though I then felt perfectly confident that, by first obtaining varieties better adapted to my purpose, I should be able to raise much heavier crops; and the following statement, in support of which I am prepared to adduce the most unquestionable evidence, will prove that my confidence was perfectly well founded.

"I planted in my garden, in the last season, some tubers of a variety of potato of very early habits, but possessing more vigour of growth than is usually seen in such varieties. The soil in which they were planted was in good condition, but not richer than the soils of gardens usually are, and the manure which it had received consisting chiefly of decayed oak leaves, which I prefer to other manures; because it never communicates a strong taste, or flavour, to any vegetable. No previous preparation was given to the soil; and the spot where the plantation was made was not fixed upon till the day of planting; and no manure of any kind was then given. Owing to the variety being of a very excitable habit, I planted the tubers at least 9 in. deep in the soil; and I subsequently raised the mould in ridges 3 in. high, to prevent the young plants sustaining injury from frost; but no subsequent moulding was given. I anticipated from the previous produce of the variety, which I had raised by cross breeding from two early varieties in 1830, a very extraordinary crop; and I therefore invited several gardeners and farmers to witness the amount of it; and I procured the attendance of the two most eminent agriculturists of the vicinity, who were tenants to other gentlemen. The external rows (two deep), and the external plants at the ends of all the remaining rows, were taken away, and the produce of the interior part of the plantation was alone selected; and that was pronounced to be fully equivalent to 964 bushels and 43 lb., or 34 tons, 8 cwt. 107 lb. per statute acre. Still larger crops may, I feel satisfied, be obtained; and my opinion is, that more than 1000 bushels of potatoes may, and will be, obtained from an acre of ground.

"An opinion is, I believe, generally prevalent, that varieties of potatoes, of very high and luxuriant growth, are capable of affording per acre the greatest weight of produce; but this is certainly erroneous. Such will grow in poorer soil, and, requiring wider intervals between the rows, are better calculated for culture with the plough; and therefore, perhaps, their produce may be raised at as little, or less, cost per bushel; though that is, I think, very questionable. Much time and much labour of the plant must be expended in raising the nutriment absorbed from the soil into the leaves upon the top of a very tall stem, and down again to the roots and tubers.

"The potatoes, in the extraordinary crop of which I have above spoken, were not washed, and, therefore, a deduction must be made for a portion of soil which adhered to them: but that was small, owing to the dryness and nature of the soil. Supposing a deduction of 164 bushels be made in the above-mentioned account, and to afford potatoes sufficient to plant the acre of ground again, 800 bushels would still remain; and these, if judiciously given to proper animals, would certainly give 1200 lb. of animal food. For this purpose early varieties of potatoes possess great advantages; because all our domesticated animals thrive most on potatoes after these have begun to germinate: and if those of early, and, of course, of very excitable habits, be

taken up and collected into heaps, as soon as they have acquired maturity, they will germinate in autumn, and be fit for use, without being boiled, through the winter. Potatoes of such varieties, are, however, wholly unfit for human food, late in the spring; and for such purpose those of later and less excitable habits must be cultivated. Of such kinds, in the last season, which was not favourable, owing to the plants having suffered injury from drought, I obtained a produce varying from 20 to 24 tons per acre, the soil being naturally light and poor, and not more highly manured than would have been necessary for a crop of Swedish turnips."

ART. II. *Catalogue of the Cellulares, or Flowerless Plants, of Great Britain; or those included in the Linnæan Class Cryptogamia; compiled from Sir W. J. Hooker's "English Flora,"* vol. v.; *Sir J. E. Smith's "English Flora,"* vol. iv.; *Mackay's "Flora Hibernica;" Henslow's "Catalogue of British Plants," and other Sources.* By W. A. Leighton, B.A. F.B.S. Edin., &c. Sheet. London. Price 6*d.*

THIS list has been very neatly printed on a very large sheet, in order that it may, if required, be transmitted by post at the rate of a single postage. On the other hand, those who wish to use it as a pamphlet have only to cut it through the middle, and then refold the two halfsheets.

MISCELLANEOUS INTELLIGENCE.

ART. I. *General Notices.*

THE Kyanising of Wood for Garden Purposes.— When we mention that Messrs. Loddiges have used no other wood, for several months past, in constructing sashes, rafters, in making tallies for naming plants, and even rods for tying them to, we think we have said enough to show the practical value of the process of Kyanising. We trust, therefore, that every gardener who sees this will direct his master's attention to the subject, as likely to produce a considerable saving in the annual expense of keeping up gardens and hot-houses. Even the saving of labour in cutting tallies and rods for tying plants to, where there are extensive collections, is not unworthy of notice; independently altogether of the greatly increased durability of the wood employed for rafters, hot-bed frames, sashes, trellis-work, doors, fences, wheelbarrows, seats, sheds, summer-houses, plant-boxes, &c. It has been stated to us, on an authority on which we think we can rely, that, where articles are cut into the forms required, such as tallies, props for rods, &c., brushing them over with a solution of corrosive sublimate will be found sufficient to insure durability; but, as the price of Kyanising is a mere trifle, we scarcely think it worth while for any one to attempt it himself. The Hon. and Rev. W. Herbert has tried a solution of alum water, and found it effective in preserving birds; and he has suggested to us that it might be tried for preserving wood, such as tallies, rods, &c. We believe Mr. Herbert is making some experiments in this way himself, and we would suggest a trial to gardeners and naturalists, since it involves very little expense. — *Cond.*

" *A Botanical Collector to discover the chief Beauties of any particular District,* should visit all its principal hills and valleys, woods and plains, not less than six times in the year. To do so in the least degree satisfactorily, and prepare a partial herbarium of the district, a space of country 30 miles square would, on the average, including barren parts and water, prove an ample portion, even for a cursory examination. Now, as America alone contains about 15,000,000 of

square miles, it will be found that it would occupy upwards of 800 botanists 20 years to collect the principal riches of this country." (*Maund's Botanic Garden*, June, 1837.)

The Geography of Evergreen Trees. — "In the northern hemisphere, especially in Northern Europe, evergreen trees, as well as shrubs, follow more or less the sea coast; and in southern Europe, where all the countries, by their peculiar configuration, are surrounded by the sea, we have a great predominance of these vegetable forms. In the southern hemisphere, on the contrary, the appearance of evergreen trees and shrubs is quite an unusual phenomenon; perhaps such vegetable productions stand in more intimate connexion than we suppose with the predominating influence of the sea. Here, it is not only the subtropical zone, not only the warmer portion of the temperate zone, which corresponds to our southern Europe, but we find this form of trees with evergreen leaves extending even to Magellan's Straits, and beyond them; and our tender-leaved box of northern Europe corresponds to the evergreen box trees of South America, the southern parts of New Holland, Van Diemen's Land, New Zealand, &c." (*Meyer on the Distribution of Vegetation on the greatest Heights of the Himalayah and Upper Peru*, as quoted in *Jameson's Journal, July*, 1837, p. 40.)

Effect of Forests on the Size of River Currents. — M. Boussingault, in a memoir recently presented to the Academy of Sciences at Paris, has endeavoured to show the effects which the clearing away of forests has upon the force and abundance of the river streams in a country. He thinks that the current of water diminishes in proportion as the clearings extend; and was led to take this view from observations made in America, especially in the lake of Tacarigna or Valencia, in Venezuela, which has no outlet. This lake, in fact, diminished in depth as fast as the forests were grubbed up; but as soon as, on account of political troubles, the grubbing up ceased, the waters began to assume their primitive level. Similar results have been furnished by the Lake of Ubate, in New Granada, and even by those of Switzerland.

M. Boussingault also thinks that clearing away the forests has a direct tendency to diminish the quantity of rain. In the provinces of San Buenaventura, of Choco, and of Esmeralda, which are situated to the south of Panama, and where rains are almost continual, the soil is covered with thick forests; whilst towards Paita, beyond Tumbez, the forests have disappeared, and rains may be said to be unknown. This want of rain is in like manner observed in all the country near the desert of Sechara, and even to Lima; yet these two countries enjoy the same temperature, they present nearly the same surface, and have a like position relatively to the mountains.

M. Arago remarks that a contrary result has been observed at Viviers, in the department of Ardèche, where the quantity of rain fallen has augmented since the clearing of forests from the country.

On the other hand, M. Devèze of Chabriol has come to the conclusion, from the examination of several historical documents, that in the department of Cantal, in the environs of Saint Fleur, there has been an abatement of temperature since the disappearance of the forests. For example, from the records of the 13th and 14th centuries, it is proved that at this period the vine was cultivated on the slope of the hill of Saint Fleur, and this culture will not succeed at present. The chestnut has also disappeared from many of the cantons where it formerly flourished; and many villages situated near the summits of mountains have been abandoned. It is also remarked that, in this country, many streams have been dried up in consequence of the clearing of the forests. (*L'E'cho du Monde Savant, May* 3. 1837.)

Amber has been recently discovered by some German philosophers to be "nothing else than an indurated resin, derived from various trees of the family of the Conferæ; which resin is found in a like condition in all zones, because its usual original depositories (viz. beds of brown coal) have been formed almost every where under similar circumstances. (*Jameson's Journal, July*, 1837, p. 173.)

On the Relations of Colour and Smell in the more important Families of the Vegetable Kingdom, as extracted from a work entitled "*Ueber das Licht Vorzugsweise über die Chemischen und Physiogischen Wirkungen desselben*," by Dr. Landgrebe of Marburg, in *Jameson's Journal* for January, 1837. — G. Schübler and F. J. Köhler have lately published (in an *Inaugural Dissertation* by the latter, Tübingen, 1831, 8vo) the results of some very interesting investigations on the relations of colour and smell in the more important families of the vegetable kingdom, and have thrown much light on this hitherto little cultivated field.

They examined the relations of the flowers of 4200 plants belonging to 27 different families, of which latter 20 were dicotyledonous, and 7 monocotyledonous. In 21 of these families, the whole genera and species are considered, in so far as particular information could be obtained; and in 6, the more important genera were submitted to a careful examination and calculation.

Among the Monocotyledons, the following natural families were investigated: — the *Liliàceæ Dec.*, the *Hemerocallídeæ Dec.*, the *Amaryllídeæ* Dec., the *Scílleæ Reichenb.*, the *Irídeæ Dec.*, the *Smilàceæ Dec.*, and, lastly, the *Cánnæ Dec.* On the other hand, among the Dicotyledons were examined more especially the *Jasmíneæ Dec.*, the *Solanàceæ Dec.*, and the *Gentiàneæ*, together with 17 others, which were not so extensively examined as the 3 first; viz., the *Boragíneæ*, the *Heliotròpeæ*, the *Lysimàcheæ*, the *Primulàceæ*, the *Polemòneæ*, the *Convolvulàceæ*, the *Campanulàceæ*, the *Violarièæ*, the *Lenticulàreæ*, the *Stellàtæ*, the *Rosàceæ*, the *Sarmentàceæ*, the *Ranunculàceæ*, the *Papaveràceæ*, the *Nymphæàceæ*, and the more important genera of the *Scrophulàreæ* and *Cruciàtæ*.

The above-mentioned families of the Monocotyledons have, in general, a greater tendency to flowers of the white and yellowish red series of tints, than those of the Dicotyledons. Blue-flowering species are much rarer among the first than the last; whereas the Monocotyledons include a much greater number of odoriferous species. The families of the lilies, the *Hemerocallídeæ*, the *Amaryllídeæ*, the *Scílleæ*, and the *Irídeæ*, contain, on an average, 14·2 per cent odoriferous species; whereas the families of Dicotyledons cited above contain only 9·9 per cent.

Among the already mentioned 5 families of Monocotyledons, the *Amaryllídeæ* contain the largest number of white-flowering, and, at the same time, of agreeably scented, species. Of 100 species, there are 38 which are white-flowering; whereas the blue-flowering species seem to be wanting: there are 27·8 per cent odoriferous species. The *Irídeæ*, on the contrary, have rarely white flowers; and odoriferous species are seldom met with, there being only about 9 to 10 per cent. There are many blue-flowering species (19 per cent), and only 11·8 per cent having white flowers. The *Rosàceæ* are, after the *Jasmíneæ*, the richest among the previously enumerated families of Dicotyledons in white-flowering and odoriferous plants. There the blue colour is entirely wanting. In 100 species, 36 are white, and 13·1 are odoriferous.

The *Campanulàceæ*, *Gentiàneæ*, and *Papaveràceæ* are the poorest of the dicotyledonous families in white and odoriferous species. Among the two first, there are many white-flowering species; and, among the last, many violet-coloured flowering species. To confirm this observation, I may state that there are only 4·10 species in 100 having white flowers, and hardly 1·2 in the same number possessing any smell. If we arrange the colour relations in a general table, we have the following results: —

Colour.	In 4000 species.	Mean in 1000 species.	Colour.	In 4000 species.	Mean in 1000 species.
White	1193·3	284	Yellow	951·3	226
Red	923	220	Orange	50	12
Violet	307·5	73	Brown	18·5	4
Blue	594·5	141	Black	8·5	2
Green	153	36			

Hence, it appears that white is the most extensively distributed colour, and that, among the coloured flowers, red, yellow, and blue are of more frequent occurrence than the three intermediate tints, violet, green, and orange. Of the three principal colours, yellow is the most abundant, but blue the rarest; while of the three intermediate colours violet is the most frequent. When flowers occur having a green colour, the tint is generally not pure, but is rather a dirty yellowish green; for, indeed, a pure green in flowers is an extremely rare phenomenon. It is also remarkable, that brown and black, which do not present themselves in the optical spectrum, are rare in flowering plants.

If we proceed in regard to the relations of smell in plants, in the same manner as in those of colour, there results the following general view, from which it may be remarked, that the few black-flowering species can be brought into the calculation only by deducing the general mean: —

Colour.	No. of Species.	Odoriferous Species.	Odoriferous Mean in 100 Species.	Colour.	No. of Species.	Odoriferous Species.	Odoriferous Mean in 100 Species.
White	1193·5	187	15·66	Violet	307·5	23·5	7·64
Red	923	85·4	9·25	Orange	50	3	6
Yellow	951·3	75·6	7·94	Brown	18·5	1·2	6·48
Blue	594·5	30·9	5·18				
Green	153	12·8	8·36	Gen.Mean	420·0	419·3	9·99

It is thus evident, that, as the white-flowering species are most numerous, so are they the most generally odoriferous. Among the coloured flowers, the red have the greatest tendency, and the blue the least, to the formation of odoriferous substances. On the average, there is only one odoriferous species in ten.

If we further separate the species having an agreeable, from those having a disagreeable, smell, we obtain the following results: —

Colour.	No. of Species.	Having an agreeable odour.	Having a disagreeable odour.	Mean in 100 Species.	
				Having an agreeable odour.	Having a disagreeable. odour.
White -	1193·5	755	12	14·66	1·00
Red - -	923·	76·1	9·3	8·24	1·01
Yellow -	951·3	61·1	14·5	6·42	1·52
Blue -	595·5	23·3	7·5	3·91	1·26
Violet -	307·5	17·5	6·0	5·68	1·95
Green -	153	10·3	2·5	6·73	1·62
Orange -	50	1·0	2·0	2·00	4·00
Brown -	18·5	0	1·2	- -	6·48
Coloured-flowering altogether.	2997·8	189·3	43·0	6·31	1·43

From this table it is apparent that white-flowering plants are much more frequently agreeably perfumed than coloured-flowering; for in 100 white-flowering plants, there are, on an average, 14·6 having an agreeable smell, and only one having a disagreeable; whereas in the same number of coloured-flowering plants, there are 6·3 having an agreeable odour, and 1·4 having a disagreeable.

There are therefore among the white-flowering plants a greater number of species having an agreeable smell than among the coloured-flowering, in the proportion of 63·146; on the contrary, among the coloured-flowering there are a greater number of plants having a disagreeable smell than among the white-flowering, in the proportion of 10·14.

The individual colours exhibit further the following differences, when the flowering odoriferous species in each colour are reduced to 100 agreeable-smelling species: there are, according to the above relations, in the flowers of 100 agreeable-smelling species, —

Having a White colour -	6·8	Having a Violet colour -	34·2
Red - -	12·2	Green - -	24·2
Yellow - -	23·5	Of coloured flowers altogether	22·7
Blue - -	32·2		

The orange and brown flowering plants seem to possess a larger number of disagreeable than of agreeable-smelling species. Among 4200 species examined, there are two brown plants which are odoriferous, viz. the *D*elphínium tríste *L.*, and the brownish-red flowering Scrophulària aquática *L.*; and three odoriferous orange and yellowish-red flowers, the Nicot*iàna* glutinòsa *L.*, Alèstris Uvària, *L.*, and *V*erbáscum versiflòrum *Schrad.*: the last alone has an agreeable smell; the others have a disagreeable odour. It is well known, and not on that account the less remarkable, that the great genus Stapèl*ia*, which so frequently exhibits flowers of a yellowish-red or yellowish-brown colour, includes so many species having a disagreeable odour, often like that of carrion; further, that two species, distinguished by their peculiarly offensive odour, viz. the *A*rum divaricàtum *W.*, and the *A*sarum europæ*u*m, should possess a dark brown, passing into violet, corolla.

We perceive, then, from these details, that white flowers are, for the most part, and especially, sweet-smelling; but the family of the Cruciàtæ is in this respect an exception, for many of the species have non-odoriferous flowers, whereas they possess as a compensation a transient sharpness; as in the genera Cochleària, *L*epídium, *C*ardámine, *T*hláspi, *S*isýmbrium, Senebièr*a*, &c. Among the Monocotyledons, we observe the same thing in the genus *A*llium.

After having deduced these results from the species considered collectively, the authors take a general view of the larger genera in regard to the relations of colour and smell, in which they separate the genera of each principal colour into three divisions, according to the different proportions of white in their flowers; they then enumerate together the whole species of each colour; and thus calculate the number of odoriferous species which occur, taking the mean of 100 species. (*Edin. Phil. Journ.*, January, 1837, p. 11.)

Entomology. — Dr. Robineau Desvoidy, physician at Saint Sauveur, in the department of Yonne, has made some interesting and novel observations concerning insects, and presented seven memoirs detailing them, to the French Academy of Sciences. The first treats of two species of mason bees, which build their nests in empty snail-shells of two sorts, the Hèlix aspérsa, and the H. nemoràlis, and belong to the genus O*'*smia. One of these species the author names Helicícola; and it is remarkable for closing the orifice of the shell by a papyraceous operculum, composed of vegetable remains, united by a gummy juice, proceeding from the saliva of the bee: there is then a layer of yellowish honey; and after this the cells are continued to the top of the spire. The second species, under the name of bícolor, chiefly inhabits the H. nemoràlis; and in its nest are found fragments of pebbles, either calcareous or siliceous, placed in four or five successive layers, and separated by a partition of paper: at the bottom only are one or two cells, each containing some yellowish honey, and one larva. In these nests M. Robineau has found a parasitical insect, named Sapỳga punctàta, but could not ascertain how the females introduced themselves to deposit their eggs. Another parasite, called S. Chelóstomæ, penetrates the nests of the Chelóstoma (which is found in the trunks of old trees) at the moment that they are quitted by the rightful owner. A third memoir treats of the parasites of the badger, as they exist in the small intestines, or in the outer part of the body. The fourth describes an insect with two wings, the larva of which lives as a parasite in the body of the drone-bee. It is a species of *C*ònops, and pursues the drone with great perseverance in order to effect its purpose. The drone seems, at first, to be very angry; shakes its wings

makes a great noise, and tries to fly from its pursuer, but is evidently under the influence of some feeling which it cannot control. Instead of rushing on an enemy so much smaller than itself, and crushing it, or flying away as quickly as possible, it remains obstinately in the place where it has been seeking honey, turning round and round; and, when tired and stationary, the *Cònops* darts upon it, and then flies off. M. Robineau thinks this to be a proof that fascination exists among insects as well as birds of prey and reptiles. The fifth contains an account of the *A'silus diadèma*, which plunges its trunk into the head of a bee, paralyzes it, and then, taking it to its nest in the ground, buries it as nourishment for the larvæ there deposited. Some new flies, one of which inhabits the *Liliàceæ*, form the subjects of the sixth and seventh memoirs. The same author has also sent a statement to the above-mentioned body concerning some caterpillars which were ejected alive from the stomach of a female by vomiting. She was aged fifty-seven years, and had been attacked with dropsical symptoms, for which six drops of the croton tiglium were administered, at three intervals; after which fourteen living caterpillars were thrown up, belonging to the *Pýralis pinguinàlis* of Linnæus. M. Robineau supposes them to have been swallowed in some greasy substance, in the state of eggs, and to have been hatched in the stomach. (*Athenæum.*)

New Silkworm. — At Maragnan and Rio Janeiro are several species of *Bómbyx*, the caterpillars of which enclose themselves in a cocoon, after having spun a thicker and stronger silk than that of the ordinary silkworm. It has been tried by Padre Mestre, and forms a very solid material. A species of mulberry, the fruit of which is small and inedible, grows near Rio Janiero, which it is proposed to cultivate for feeding the caterpillars.

On the Use of Steam in the economising of Fuel. — There is a most valuable paper on this subject in *Jameson's Journal* for July, p. 173, by Dr. Fyfe of Edinburgh. We have been for some time aware that the waste steam from boilers has been burned in manufactories, for example in that of Mr. Milne, the eminent brassfounder of Edinburgh; and also that it had been burned under boilers in wash-houses and breweries, in several noblemen's establishments in England. It was first introduced into wash-houses and private breweries, we believe, by Mr. Reynolds, late steward to the Marquess of Westminster; and was found by him so greatly to increase the heat produced, that, in the case of very large fireplaces, he was obliged to have a sort of double or protecting bottom to the boiler. It remained, however, for Dr. Fyfe to prove experimentally the great accession of heat produced by the burning of steam; so as no longer to leave any doubts as to the great advantage attending this practice. For this reason, we would recommend its adoption in the case of hot-houses heated by steam; or even by hot water, where the water is heated to such a temperature as to produce steam. The mode in which the steam is burned in a wash-house or brewhouse is very simple: the boiler is kept closely covered; but at one side, that next the wall, there is a flue of communication between the upper edge of the boiler immediately under the lid, and another flue which conducts air down to the ash-pit. By keeping the ash-pit door shut, no air is admitted to the fire but what is drawn down through this flue; and, of course, it draws down the steam along with it, and both air and steam pass upwards through the fire. By having the upper opening of the air-flue immediately under the ceiling, in the case of wash-houses, breweries, &c., any steam from the washing-tubs, or any vapour which may be floating in the atmosphere, will be drawn down and consumed; and thus the wash-house, which at present is a most unwholesome and disgreeable place, may be rendered as healthy and agreeable as any other department of the domestic offices of a house. See what we have said on this the *Suburban Gardener*, p. 78—80.

The following are the results of a few of numerous experiments made by Dr. Fyfe: —

" The vessel contained two pints of water.

Without Steam.	*With Steam.*
In 5 minutes, 130°; in 10 min., 180°; in 15 min., 200°; in 20 min., 210°.	In 5 min., 120°; in 10 min., 185°; in 13 min., 208°; boiled briskly in 14 min.
In 5 min., 145°; boiled in 10½ min.	In 5 min., 150°; boiled in 10 min.
Ditto ditto in 10 min.	Ditto ditto in 9 min.

In other trials only one pint of water was used.

In 3 min., 120°; in 5 min., 160°; in 7 min., 190°; in 8½ min., boiled.	In 3 min., 140°; in 5 min., 190°; in 6½ min., boiled.
In 3 min., 140°; in 5 min., 190°; in 6½ min., boiled.	In 3 min., 160°; in 5 min., boiled.

In numerous other experiments, performed in a similar manner, the results were found to be always the same; the water invariably boiling more rapidly when the steam was transmitted through the furnace, so that there was evidently an increase of heat. The following experiments on the *quantity of water evaporated* in a given time are also in proof of this. The same furnace and steam apparatus were used as in the preceding trials, but a smaller vessel was employed for the evaporation of the water. The furnace was in good condition, and contained coke; and there was half a pint of water in the pan.

Without Steam.	*With Steam.*
In 2½ min., boiled; in 8 min., the furnace lost 4 oz.	In 2½ min., boiled; in 8 min., lost 5 oz.

With one pint of water

In 7 min., boiled; in 15 min., lost 4½ oz.	In 5 min., boiled; in 15 min., lost 7 oz.
In 4 min., boiled; in 12 min., lost 6¾ oz.	

" In all of these experiments," continues Dr. Fyfe, " I found that, when the steam was used, it required the air to be freely admitted to the inflammable matter. Indeed, when this was not done, instead of there being an increase, there was less heat; the water in the evaporating pan not being made to boil so quickly when steam was passed through the fuel as when it was omitted." (*Jameson's Journ.*, No. 45., July, 1837, p. 187.)

Washing by Steam was invented, many years ago, by the celebrated chemist Chaptal, and the process has been since improved on by Cadet-Devaux, by Curandeau, and, lastly, by M. Bourgnon de Layre. It is now employed in all the principal hospitals in Paris. The process, by the last improvement, is conducted much in the same way that potatoes used to be steamed for cattle, in Scotland, about 30 years ago; that is, the clothes to be washed are placed over the boiler; the steam rises, and is condensed among them into water, which falls into the boilers, carrying the dirt with it, and is again sent up pure in the form of steam, the dirt, from its gravity, remaining in the boiler; and this alternate rarefaction and condensation is continued till all the dirt of the clothes has been abstracted from them and mixed with the water in the boiler, which is occasionally let off and removed. The saving of water, fuel, and labour is so great, that blankets can be washed in Paris at less than a farthing a pair. The principal part of the expense is that of soaking the blankets that are to be washed, in a mixture of soft soap and water previously to placing them in the steam apparatus. (*L'Echo du Monde Savant*, June 7. 1837.)

Art. II. *Foreign Notices.*

FRANCE.

Artesian Wells. — The Artesian well at the abbatoir, near the Barrière de Grenelle, becomes every day more interesting. The boring has already reached the enormous depth of 1360 ft. Whatever may be the result of this undertaking, says the Prefect of the Seine, in his last report to the municipal council, it cannot but be interesting to geologists, from its connexion with their science; and to the industrious, from its pointing out the chance of success in similar trials. Success will lead to another result, already foreseen by philosophers, which consists in the high temperature of such a well: consequently, the water may be instantly employed in warm baths.

This well was commenced on December 30. 1833; and, during the 1200 days which have elapsed since then, the works have been directed by M. Mulot, jun., and have not been discontinued for a single day. From this it appears that the average progress has been upwards of 1 ft. 1 in. per day.

It seems that the administration are about to make an engagement with M. Mulot to bore to the depth of upwards of 1800 ft., if water be not met with before reaching this depth. (*L'E'cho du Monde Savant*, April 5. 1837.)

Colossal Elm Tree at Brignoles. — M. C. Aquillon, member of the Horticultural Society of Paris, &c., gives the following details respecting the large elm which exists in the Place Carami at Brignoles, a town about 20 miles north of Toulon: — "On the 25th of October, 1564, Charles IX., being at Brignoles, lodged in the house of M. Desparra, which is opposite to this tree, and witnessed, with great pleasure, a ball which took place under it. Michel de l'Hospital, who was born in 1503, was Chancellor in 1560, and died in 1573, speaks of this tree (as one even at that time likely to attract the attention of travellers) in one of his works in Latin verse, composed on the occasion of his being exiled into Provence. Tradition supposes that this elm was in existence when the river Carami, which at present runs without the town, flowed by the place of that name. This colossus of vegetation has been for a long time supported on one side by a wooden post, and on the other by a piece of masonry, which fills up a large hollow in the trunk. Without these supports the tree would have been infallibly blown down; for the part supported by the wooden post is hollowed out to the origin of the branches, and even serves as a retreat for poor artisans. The circumference at the level of the ground is about 23 ft., and in the narrowest part of the trunk about 18 ft. The thickness of the wood of the trunk is from 9 in. to 12 in.; and in the projecting part it varies from 3 in. to 4 in." (*L'E'cho du Monde Savant*, April 1. 1837.)

GERMANY.

Artesian Wells. — In many parts of Germany Artesian wells are begun; and Italy, of which the volcanic soil is totally unknown, is in her turn about to make a trial. M. Mulot sets off in a few days for the villa of the director of the Italian Opera, at Paris, near Bologna, for the purpose of commencing an Artesian well. We have not the least doubt of his success. At the present moment upwards of 30 Artesian wells are in progress in the departments of France.

A second Artesian well, begun at Dresden, had obtained, in October last, an abundant supply of water at the depth of 840 ft. This source, having a temperature of 68° Fahr., furnishes a supply of 14½ gallons of good water per second. They penetrated through 62 ft. of sand and gravel; 810 ft. of marl and chalk; 43 ft. of pure marl; and 22 ft. of greyish freestone. Admitting the above temperature to be that of the strata at this depth, and comparing it with the mean temperature at the surface of the earth at Dresden (48° Fahr.), we find a uniform increase of temperature of 1·20° Cels. for every 100 ft., or 1° for every 78 ft. of depth; but this increase being greater than that actually observed in boring, we must conclude that the water of this well comes from a greater depth. (*L'E'cho du Monde Savant*, April 5. 1837.)

BELGIUM.

Hybrid Fern. — Gymnográmma chrysophýlla *Spreng.*, and G. calomélanos *Kaulf.*, *Hort. Brit.*, No. 25325. and 25329., are two beautiful ferns, natives of the West Indies, which have been for some time under culture in the stoves of Messrs. Loddiges, and in some other collections. They have also been introduced into the stoves of the Botanic Garden of Louvain, where a hybrid between them has been produced, of considerable beauty. This hybrid was purely the result of accident: the head gardener, M. Donkelaar, wishing to raise some plants of G. chrysophýlla sowed the sporules of that species, and found great part of the progeny to be intermediate between it and G. calomélanos. We have no doubt this hybrid will soon be introduced into British

collections; and the fact of a hybrid fern being produced accidentally affords a valuable hint for attempting to produce others according to art. The species and varieties furnished to us by nature may be considered as the raw material, and it is for man to improve them, for his various purposes of beauty or use, by all the different modes of culture with which he is acquainted, or can devise; and of these hybridising may be considered as one of the chief. (*L'Echo du Monde Savant*, June 10. 1837.)

SWITZERLAND.

Lausanne, March, 1836. — You will receive with this a packet containing various dried specimens, sketches of trees, dimensions, and other particulars, which Mrs. B. and I have collected for your *Arboretum*. We have now been here exactly two years; and we set out, in a day or two, for Italy, whence you shall hear from us. We have made a great many excursions; and I need not tell you how much we are delighted both with the country and the people. The most remarkable circumstance, in my opinion, connected with Switzerland, is the difference in climate and in productions which are to be met with in the same locality, and even within a few yards of each other. The old custom of leading a stranger to a spot, where with one hand he can touch a strawberry and with the other eternal snow, is still kept up; and the following quotation from a work published nearly a century ago is as true now as it was when originally written: —

"The climate of this country, and especially of the Jorat, in the environs of the lakes, in the smiling and fertile plains, which are found here and there, and along the declivities and hills which look towards the south, is very warm; the vegetation there is rich and forward; the productions those of countries situated under the most favourable latitudes. In the environs of Lausanne and Geneva, for example, which are protected from the north winds by the elevated parts of the Jorat and the Jura, and where the rays of the sun are reflected by the waters of the lake and the rocks of Savoy, the heat is such, that sweet chestnuts, walnuts, horsechestnuts, and even Lombardy poplars, thrive; it must be confessed, however, that the Lombardy does not attain the same height, erect growth, and beauty, that it does in Italy. Wheat generally comes into ear and flowers about the beginning of June, and is cut about the middle of July. Rye shoots up in April, comes into ear about the end of the same month or the commencement of May, flowers in the end of May, and is cut about the end of July. Oats come into ear about the middle of June, and are cut immediately after the wheat, in the end of July. The vine begins to shoot about the end of February; it is in full flower in the middle of June, and the grapes are commonly gathered about the beginning of October. The meadows are green at the end of February or the beginning of March; and are mown at the commencement of July, and a second time in the middle of August. Near Lausanne, it is observed that the harvest takes place about eleven days sooner at the foot of the hill than on the summit. On the border of the lake, at Cour, laurels grow in the open air; melons and figs ripen quickly and perfectly; pine-apples are kept in the green-house, and never heated. Towards the summit of the hill, nuts are rarely found, and all the figs perish: peaches never attain maturity there; and it is only apple and pear trees which ripen their fruit." (*Hist. Nat. Jorat*, i. p. 5.)

There are, however, some elevated cantons, which are surrounded with rocks, and enjoy a mild temperature; these are mostly narrow valleys, and, amongst others, the smiling valleys through which the Broye flows, that of Mondon, and between Mondon and Payerne.

It is different in other elevated cantons, such as those of Chalet-à-Gobet, Chalet de la Ville, &c.

SWEDEN AND NORWAY.

Zones of Vegetation observed in the Scandinavian Peninsula. — "At North Cape, lat. 71°, potatoes, broccoli, and gooseberries are reared with some diffi-

culty. One degree farther south, at Alten (70°), a little barley makes its appearance. At Enontekis (68° 30′), the crops (barley and bear) yield a remunerating harvest, on an average, once in three years. Rye and hemp cannot be successfully cultivated beyond the 66th, nor oats beyond the 64th, parallel. This latter is also the general limits of garden cultivation. The cherry tree, alder, and maple cease to thrive beyond the 63d; the ash and the willow, at the 66th; the elm, lime, and oak, at the 61st parallel. The natural beech woods of Sweden do not extend beyond lat. 57°. Finally, the mulberry, the chestnut, and the walnut arrive at perfection in Schonem (54°), at the southern extremity of the Peninsula. On the coasts of Norway, vegetation is less curbed by the rigours of winter than in corresponding parallels on the shores of the Baltic; and, according to Mr. Laing, pears, plums, and sometimes even chestnuts, ripen in the neighbourhood of Moldes, 62° 47′ north latitude." (*Forsell's Statistics of Sweden*, as quoted in *Jameson's Journal*, vol. xxii. No. 44., *April*, 1836.)

INDIA.

" *The singular Form which many of the Trees assume* [*in the Island of Little Carimon, near Singapore*] is not the least remarkable feature in the varied phenomena displayed by the vegetable creation. I allude more particularly, in the present instance, to a remarkable and very obvious disposition in the roots and lower part of the stem of the larger trees to form winged appendages of great magnitude. These tabular compressed appendages are three or four in number: they obviously serve as supports to the weighty incumbent mass of stem and leaves, thus compensating for the want of depth of soil, only a few inches into which the roots can penetrate before they are obstructed by the surface of the rock: they are thus forced to extend horizontally. A tree of this description, torn up by its roots, affords a singular spectacle, and one in which the economy of vegetable life is peculiarly remarkable, inasmuch as this economy is obviously exerted in overcoming the difficulties which oppose its developement. Every crevice in the rocky base, every chink, has been occupied by the root; a thin, but hardy, network extends along the ground, to a distance often equal to the noble altitude of the tree itself. The thin-winged appendages to the tree, or its supporting walls, as they may justly be termed, partake more of the nature of roots than of trunk, though altogether out of the earth. They possess, generally, a smooth, softish, and very thin cuticle, green underneath, abounding in the vegetable juices of the tree, and are remarkably hard. They sometimes extend horizontally, in a straight, but more commonly in a curved, direction, 15 ft. or 20 ft.; their edges being 6, 8, or more feet above the ground, gradually decreasing from the stem to the earth. In some instances they are formed into walls, resembling fortifications." (*Finlayson's Mission to Siam and Cochin-China, as quoted for us by J. B. W.*)

" *The most extraordinary Plant in these* [*the Sechang*] *Islands*, is one bearing affinity both to Dioscòrea and to Menispérmum, but differing from both in some essential generic characters. The great beauty of the creeping stem, suspended in elegant festoons from the branches of the surrounding trees, were sufficient to attract attention. But the most singular property of this herbaceous plant is the disposition which it has of forming tuberous roots of a most extraordinary size; a circumstance the more singular, because, independently of the small size of its stem, scarcely larger than a quill, it is found growing in the most arid and sterile situations, without a particle of earth to conceal its roots; neither are its leaves succulent, nor its stem nor root of a texture apparently fitted to convey a large proportion of vegetable juice, both being hard and fibrous. The singular tuberosity of this plant is formed at the exit of the root from the rock, or surrounding stones, and is, in general, buried about one fourth under the surface. The part exposed is globular, of a dirty white colour, warty; and internally, the yam is tough and fibrous, rather than spongy. One brought on board, on account of its size, weighed 474 lb., and measured 9½ ft. in circumference; others, of still greater size, were not uncommon. It will

be conceived, that such vast masses of vegetable matter are but little adapted to become the food of man; it is, however, not altogether neglected for that use, though but rarely had recourse to. For this purpose, the farinaceous matter is separated from the juice, vegetable fibre, and other products, by drying, maceration, &c. The root is also used in medicine.

"Of all the tuberous roots, this would appear to be by far the largest and most extraordinary. In other plants of the kind, the tuberosities are proportiond to the size of the plants, and their visible means of nourishment. In this the yam is of the most gigantic size, and its stem extremely small. The means of nourishment are by no means apparent. Earth and water, the ordinary sources of vegetable nutriment, are almost altogether wanting: the stem is not of a structure to require anything but simple support from the surrounding trees. There remains no visible source but the atmosphere, to which its numerous leaves are amply exposed, through the aid of the surrounding trees." (*Ibid.*)

The Melon is the choicest fruit of Bokhara. — There are two distinct species of melons, which the people class into hot and cold; the first ripens in June, and is the common musk or scented melon of India, and not superior in flavour: the other ripens in July, and is the true melon of Toorkistan. In appearance it is not unlike a water-melon, and comes to maturity after being seven months in the ground. It is much larger than the common sort, and generally of an oval shape, exceeding 2 and 3 feet in circumference. Some are much larger, and those which ripen in the autumn have exceeded 4 ft. One has a notion that what is large cannot be delicate or high-flavoured; but no fruit can be more luscious than the melon of Bokhara. I always looked upon the melon as an inferior fruit till I went to that country; nor do I believe their flavour will be credited by any one who has not tasted them. The melons of India, Cabool, and even Persia, bear no comparison with them; not even the celebrated fruit of Ispahan itself. The pulp is rather hard, about 2 in. thick, and is sweet to the very skin; which, with the inhabitants, is the great proof of superiority. A kind of molasses is extracted from these melons, which might be easily converted into sugar. There are various kinds of melons: the best is named *kochechu*, and has a green and yellow-coloured skin: another is called *ak nubat*, which means *white sugar-candy;* it is yellow, and exceedingly rich. The winter melon is of a dark green colour, called *kara-koobuk*, and said to surpass all the others. Bokhara appears to be the native country of the melon, having a dry climate, sandy soil, and great facilities for irrigation. Melons may be purchased in Bokhara throughout the year, and are preserved by merely hanging them up apart from one another; for which those of the winter crop are best suited. The water-melons of Bokhara are good, and attain, also, an enormous bulk: twenty people may partake of one; and two of them, it is said, form sometimes a load for a donkey. The cucumbers are likewise superior." (*Burnes's Travels into Bokhara, as quoted for us by J. B. W.*)

Vegetation of the Mountains of Nillgherry. — M. Perrottet, director of the garden at Pondicherry, writes to M. Benjamin Delessert, in a letter dated Kaïti, containing curious information on the vegetation of the mountains of Nillgherry. The East India Company have granted the experimental farm at Kaïti to the French governor, the Marquis de Saint Simon. This farm is situated in a very favourable spot for botanical researches, and for the naturalisation of plants. The governor intends collecting all the useful and interesting plants of the Nillgherry, to cultivate and propagate there, and then to send them to the Royal garden at Pondicherry, whence they will be forwarded to the colonies and France. He wishes, also, to sow at this establishment different sorts of seeds of grain and forage, &c., to supply the colony of Pondicherry, which is very deficient in both; and that of Bourbon, which suffers no less from a want of these productions. In the middle of India, a vegetation analogous to that of Europe is found. Two very distinct regions characterise the Nilgherry: the region of the lower mountains, and that of the higher mountains. In the first, most of the plants of tropical India are found; while in

the alpine region, or the high mountains, grow the *Ranunculàceæ*, *Gentiàneæ* Umbellíferæ, and other plants of temperate climates. One of the finest trees which adorn the hills, and which is now in flower, is a magnolia, or, rather, talauma; which is more than 50 ft. high: its flowers exhale an extremely sweet odour, which scents the air to a great distance. (*L'Hermès*, Feb. 1837.)

Art. III. *Domestic Notices.*

ENGLAND.

Owen's Animalised Carbon. — Five or six years ago, Mr. Owen happening to be at Copenhagen, and observing that the emptyings of the privies, and the bones, and such like domestic refuse, had been for many years, perhaps for centuries, deposited in four or five large pits in the outskirts of the town, conceived the idea of using it as manure. He purchased the contents of all these pits, and is now selling it in the form of compressed powder, as a most valuable manure, which it doubtless is. In 1835, 700 tons of this manure were sent from the manufactory at Copenhagen; in 1836, 1600 tons, and in 1837, up to about the middle of June, when our informant, Mr. Petersen, left Copenhagen, 3000 tons were exported.

The South London Floricultural Society have held several shows, in the course of the season, at the Surrey Zoological Gardens, which have been numerously attended: many choice articles have been exhibited, and many prizes obtained. The Surrey Zoological Gardens improve in beauty every year, and the named trees there, which constitute the arboretum, are now becoming very interesting objects.

A Collection of Cácteæ and Orchídeæ, said to include a number of species never before in the country, arrived in London about the end of June, and has since been on sale under the auspices of Mr. Charlwood. Among the most extensive purchasers of these plants, we understand, is Mr. Harris of Kingsbury; a gentleman who has lately commenced horticultural and botanical pursuits with great ardour, and who, having had the good fortune to meet with such a man as Mr. D. Beaton, and the good sense to engage him as his head gardener, will, in all probability, soon render important service to horticultural and botanical science. — *Cond.*

A new Hybrid Rhododendron, originated by fecundating the blossoms of *R.* arbòreum with *R.* pónticum, in Knight's Exotic Nursery, some years ago, is now in flower in the green-house at the Duchess of Bedford's, Camden Hill. The blossoms are large, of a rich pink, inclining to scarlet, very similar to the colour of *R.* phœníceum (Azàlea phœnícea); and Mr. Caie, Her Grace's gardener, informs us that the blossoms are produced in great abundance, and that, though he has taken the plant into the green-house, yet he considers it quite hardy, it having stood in the open border at Camden Hill two or three winters.

The Manchester Botanic Garden. — I had often heard of the magnificent range of horticultural buildings in the Manchester Botanic Garden; but never, since their completion, had I seen them until yesterday, when, having some business to transact with the curator, I took that opportunity of minutely inspecting them. The entire range of buildings extends about 320 ft. in length, and consists of two curvilinear-roofed green-houses, forming the extreme ends; two intermediate hot-houses, or stoves, with flat sloping roofs; four connecting corridors, forming the principal entrances from the terrace-walk in front, each having a glazed curvilinear roof; and a splendid conservatory in the centre of the range; which, being surmounted by an elegant glass dome, somewhat resembling in its outline the dome of St. Paul's, London, and rising to the height of nearly 40 ft. from the floor, gives such an imposing and fascinating effect to the whole, that I should in vain attempt to describe it. But the peculiarly distinguishing and most important feature in this range

of buildings is, that, with the exception of the walls, it is composed entirely of metal and glass, the dome and the curvilinear roofs being formed of wrought-iron bars, whilst the gutters and all the framework of the upright sashes are of cast iron: the flat sloping roofs have also cast-iron rafters, the intermediate sashes or lights being made with wrought-iron rims and copper bars, and glazed upon the patent shield principle; which, I am told, is an effectual preventive against breakage by frost: the doors are likewise of cast iron, with copper bars; and, what is particularly worthy of remark, they are made to slide in grooves, upon brass rollers, instead of being hung in the usual way, by which are gained several important advantages, too obvious to mention. It is impossible to give an idea, by any verbal description, of the lightnesss and elegance of these horticultural buildings. Their seemingly airy and unsubstantial form produces upon the eye of the spectator, at a first glance, a magic-like effect, which, on a nearer inspection, is absorbed in a feeling of amazement at the real strength and firmness of the several buildings, announcing a durability to which no limit can be assigned. The erection of these metallic houses, as I am informed, was commenced in 1832, by Messrs. John Jones and Co. of Birmingham; but the range of buildings was not completed until last summer, when the conservatory, which forms the chief point and centre of attraction, was erected by Mr. Thomas Clark, jun., also of Birmingham. It is, however, due to Mr. Jones to state, that the design for the conservatory was originally furnished by him, and the building was, in fact, executed under his immediate superintendence; Mr. Clark having, upon the dissolution of the firm of Messrs. John Jones and Co., about three years ago, as I have learned, engaged that gentleman to superintend the manufacturing department of his extensive and increasing concern. With respect to the gardens themselves, too much praise cannot be bestowed upon Mr. Campbell, the intelligent and scientific curator of the establishment, not only for the judicious and tasteful manner in which they are laid out, but also for the beautiful and perfect order in which they are kept. The site, however, is decidedly inferior either to the Sheffield or Birmingham Botanic Gardens; both the latter being beautifully undulated by nature, whilst the former is remarkably flat. Art, however, has done its best to compensate for natural deficiencies; and those essential elements of the picturesque, rock, wood, and water, are so happily interspersed and combined, as to make us oblivious that nature has contributed so little to the adornment of this really enchanting spot. — *J. C. Thomas. Prestwich, June* 16. 1837.

SCOTLAND.

Early-mowing Grass. — Mr. Kay of the Shiphaugh Farm, near Stirling, commenced cutting grass on April 25., which turned out a tolerably good sward. The field consists of nearly two acres of clayey loam, which was sown down on July 11. 1836, with the following mixture: — Italian ryegrass, perennial ryegrass, Timothy grass, meadow foxtail, white and red clover, and cow-grass. The Italian ryegrass, in the mean time, is far ahead of the others, and confirms the opinion we had previously formed of this newly introduced grass, that there is no agricultural plant better adapted to come in, after the turnip season, as early green food for cattle. When cultivated for this purpose, it should be sown in autumn, along with *Trifolium incarnatum* (crimson ryegrass), which keeps pace with the Italian ryegrass in early and vigorous vegetation. (*Stirling Observer.*)

Art. IV. *Restrospective Criticism.*

Errata. — In p. 279., lines 12. and 14. from the bottom, delete the inverted commas; it being the reviewer who speaks, and not Mr. Herbert. In p. 306. for "Pullen," read "Puller."

Art. V. *Queries and Answers.*

You are aware, I presume, that immense quantities of sugar are annually made from the juice of the *Acer saccharinum*, in the west of Pennsylvania and New York, with which our forests abound (Professor Kid, in his *Bridgwater Treatise*, says they are "cultivated"!); and, as the peculiarities attending the flow of this juice have puzzled me to explain them, I have resolved to state them to you. 1st, It is as completely locked up by continued warmth as by frost, and only flows by the alternate operation of these agents: yet the same degrees of heat, even after frost, have not always the same effect. Thus, a warm south wind stops the flowing more than a cool north-west wind. A bracing wind promotes the discharge, and a relaxing wind checks it. 2dly, The juice flows for twenty-four hours after a frost; but, when a tapped tree has ceased, tap a new tree, and it will flow considerably, as if a certain quantity was discharged by the frost. The juice flows from all sides of the incision. 3d. Tap a tree early in the morning, after a cold night, and no juice will flow; tap it a few hours after, if the day be moderately warm, and the juice will issue in streams. February, and early in March, are the months in which the sugar is made. The people encamp in the woods, and remain there until the trees cease to flow, or they have procured as much as they require. Now, I wish to know, if the saccharine juice be sap, how it happens that a moderately cold night is essential to an abundant flow next day? The farmers told me, "We can do nothing in sugar-making without cold nights." I thought that the sap never flowed until an increase of temperature took place. State the facts in your Magazine, if you please; but give me the explanation by letter, or add it to the article. — *M. Philadelphia, March* 16. 1837.

The circumstances attending the flow of sap from the sugar maple of the United States, so accurately detailed by your correspondent at Philadelphia, show, not only what is known from the experience of the manufacturers concerning the flow of the juice, but also under what circumstances the flow is more or less copious.

The movements of the sap of the maple are exactly similar to those of all other trees at the same season, or that are exposed to the same vicissitudes of weather. Why do not trees yield a flow of sap from a wound in summer? Because every drop absorbed by the roots in that growing season is required to supply the demands of the transpiring bark, leaves, and lengthening shoots, with their flowers or fruit; so that there is no excess to run out of a wound. And why does the sap not flow in winter? Because, in that cold season, it is inspissated; and the pores of the bark are then all naturally sealed. On the return of spring, however, the sap becomes fluid; and as soon as the buds begin to swell, an ascending current commences, and continues during warm weather, and is expended not only in enlarging the buds, but escapes imperceptibly and copiously through the porous bark. During this process, should a frosty night or "bracing wind" happen, the pores of the bark are shut up, and the sap accumulates within the vascular membranes; and if, when so collected and pent up, the tree be tapped, an abundant stream will issue out, and continue to run until the surcharge is exhausted, or until a warm state of the air causes a general evaporation of the juices from every other part of the tree, or, lastly, until the flow becomes arrested by frost.

Thus, the quantity of sap is alternately scanty and copious, according to the temperature of the air, or as the tree has been more or less previously drained during the spring months; that is, during the period which elapses between the bursting of the buds and the developement of the foliage.

That sap keeps ascending to, and accumulating on, the recently formed layers of liber and alburnum, when the juices in the bark are congealed by frost, may be inferred from what often takes place in America, and other

northern countries, in very hard and long-continued frost; namely, the largest and hardest timber trees are rent asunder by the expansive force of the warmer sap, and elastic gases enclosed therewith. — *J. M. London, April*, 1837.

Horticultural Societies. — We have had great difficulty in arranging the scheme of prizes so as to afford equal chances to all competitors. We have not funds sufficient to give separate prizes in every article for nurserymen and gentlemen's gardeners. Could you not assist us by requesting the officers of horticultural societies to send you their schemes, and by giving them in the December Number of your Magazine, either in a tabular or digested form? — *T. W. Barnsley, June* 28. 1837.

Pìsum sp. — Mr. Herbert, in his excellent work on Amaryllidàceæ mentions, (p. 353.) a leguminous plant, which he had seen cultivated in Yorkshire, having the growth of a vigorous field-pea, but seeds that no man would hesitate to call beans, and which have the flavour of beans when boiled. The plant is very fertile, and has every appearance of being a mixed production between the pea and the bean. Can any of your readers inform me where I could procure seeds of this very remarkable plant? — *Thomas Brown. York, April*, 1837.

Art. VI. *The London Horticultural Society and Garden.*

Award of the Judges at the Exhibition; May 13, 1837 :—

The Gold Knightian Medal. — For exotic Orchídeæ, to Sigismond Rucker, Esq., jun., F.H.S.; for exotic Orchídeæ, to Messrs. Rollisson of Tooting; for a large collection of stove and green-house plants, to Mr. John Green, gardener to Sir Edmund Antrobus, Bart., F.H.S.

The Gold Banksian Medal. — For green-house azaleas, to Mr. Smith, of Norbiton; for a large collection of stove and green-house plants, to Mr. Butcher, gardener to Mrs. Lawrence, F.H.S.; for six stove and green-house plants, of different genera, to Mr. Falconer, gardener to Archdale Palmer, Esq.

The Large Silver Medal. — For green-house azaleas, to Mr. Redding, gardener to Mrs. Marryat, F.H.S.; for melon-shaped Cácti, to Mr. George Glenny, F.H.S.; for Oncídium pùmilum, to Mr. James Bruce, gardener to B. Miller, Esq., of Collier's Wood, Merton; for Dendròbium speciòsum, to Messrs. Lucombe and Pince of Exeter; for pelargoniums, to Mr. William Cock of Chiswick; for pelargoniums, to Messrs. Colley and Hill of Hammersmith; for rhododendrons, in pots, to Mr. George Glenny, F.H.S.; for rhododendrons, in pots, to Mr. N. Gaines of Battersea; for Chinese and Noisette roses, to Mr. Lane of Great Berkhampstead; for a large collection of stove and green-house plants, to Mr. James Lane, gardener to J. H. Palmer, Esq., F.H.S.; for six stove and green-house plants, of different genera, to Mr. George Glenny, F.H.S.; for six stove and green-house plants, of different genera, to Messrs. Rollison: for herbaceous calceolarias, to Mr. John Green; for shrubby calceolarias, to Mr. Butcher; for tall Cácti, to Mr. John Green; for cherries, to Mr. G. Sheills, Erskine, near Glasgow: for grapes, to Mr. George Mills, F.H.S., gardener to Mrs. Rothschild, Gunnersbury Park; for pine-apples, to Mr. George Lyne, gardener to H. Perkins, Esq., F.H.S.; for Azàlea índica púlchra, to Mr. Holland, gardener to Miss Tunno, of Taplow Lodge; for *Erica Monsoniàna*, to Messrs. Lucombe and Pince; for miscellaneous plants, to Messrs. Chandler and Sons, Vauxhall.

The Silver Knightian Medal. — For hardy azaleas, to Mr. George Glenny, F.H.S.; for heartsease, to Mr. George King, gardener at Hillingdon Place, near Uxbridge; for heartsease, to Mr. Mountjoy of Hanwell Nursery, Ealing; for pelargoniums, to Mr. Gaines; for a large collection of stove and green-house plants, to Mr. George Glenny, F.H.S.; for six stove and green-house plants, of different genera, to Mr. Redding; for Amaryllidàceæ, to Mr. Salter of Chiselhurst; for herbaceous calceolarias, to Mr. Falconer; for

shrubby calceolarias, to Mr. John Green; for strawberries, to Mr. Nieman, gardener to P. C. Labouchere, Esq., F.H.S.; for figs, to Mr. Nieman; for grapes, to Mr. John Davis, gardener to Lady Clarke; for pine-apples, to Mr. John Davis; for peaches, to Mr. Nieman; for Erythrìna *laurifòlia*, to Mr. George Mills, F.H.S.; for Gésner*a* sp. to the Misses Garnier; for Clianthus puníceus, to Mr. Barter of Roehampton; for Zàmia hórrida, to Mr. Charles Maxted; for Dryándr*a* formòsa, to Messrs. Lucombe and Pince; for Brugmáns*ia* bícolor, to Mr. George Mills, F.H.S.; for auriculas, to Messrs. Colley and Hill; for miscellaneous plants, to Mr. George Mills, F.H.S.

The Silver Banksian Medal. — For heartsease, to Mr. William Hurst, gardener to Joseph Batho, Esq., of Cheshunt; for heartsease, to Messrs. Allan and Rogers of Battersea; for anemones, to Messrs. Lucombe and Pince; for pelargoniums, to Mr. C. Russell of Battersea; for herbaceous calceolarias, to Mr. Butcher; for shrubby calceolarias, to Mr. Wilson, gardener to H. Bevan, Esq., of Twickenham; for citrons, to Mr. John Moss, gardener to J. Taylor, Esq., F.H.S; for apples, to the Rev. F. Beadon, F.H.S.; for cucumbers, to Mr. James Bisshopp; for cucumbers, to Mr. George Mills, F.H.S.; for grapes, to Mr. Nieman; for a melon, to Mr. J. Cuthill, gardener to Captain Trotter, F.H.S.; for nectarines, to Mr. Nieman; for Clintòn*ia* pulchélla, to Mr. Toward of Bagshot Park; for azaleas, to Mr. George Glenny, F.H.S.; for a chrysanthemum, to Mr. J. Cuthill.

Meeting, June 6. 1837. — *Exhibited.—Plants.* Two boxes of heartsease, from Mr. Mountjoy; one box of heartsease, from Mr. Hogg; *Ph*lóx Drummónd*ii*, 16 pelargoniums in pots, *V*erbèna Tweedi*àna*, *A*nagàllis Philíps*ii*, and a brown nasturtium, from Mr. Dennis; hybrid rhododendron between *R.* arbòreum and *R.* pónticum, from Christopher Rawson, Esq.; *Er*ìca vestìta, Linnæ*oìdes* nòva, ovàta, perspícua, Beaumónt*ia*, odòra *r*òsea, Hartnélla, *e*chiiflòra, and vestìta purpùrea; Gompholòbium polymórphum, Chorózema ovàta, C. Henchmánn*i*, and C. H. var.; Platylòbium formòsum, *Cy*tisus Rhodopnæ'a, Pultenæ'*a* bíloba, *Ph*lóx Drummónd*ii*, Cosmèlia rùbra, Calceolària pardántha, and Eriostèmon cuspidàtum, from Mrs. Lawrence; Kennèdy*a* inophýlla, from Mr. H. Fenton, gardener to J. Berens, Esq.; *A*ntirrhìnum caryophyllöìdes, from P. Conway, gardener to Lawrence Sulivan, Esq.; Bifrenària aurantìaca, Aérides odoràtum, Saccolòbium guttàtum, Epidéndrum aromáticum, Trigonídium obtùsum, Zygopétalum Mackà*ii*, Cattlèy*a* Forbès*ii*, Maxillària tetrágona, Oncídium papílio, Epidéndrum sp. from Guatemala, and O. crìspum, from Mr. P. N. Don, gardener to James Bateman, Esq.; a brace of cucumbers, from the Marquess of Blandford; Kennèdy*a* coccínea, and K. dilatàta, from Mr. Glenny; Gaillárd*ia* pícta, *Ph*lóx Drummónd*ii*, Tropæ'olum pentaphýllum, Nemóphila atomària, *Petùnia* sp. large blush, *Petùnia* sp. seedling hybrid; *S*ìdum azùreum, *A*'rum zebrìnum, *Bérberis* sinénsis, *S*piræ'a bélla, Pentstèmon Scoúler*i*, *V*erbèna Tweedi*àna*, *Pæòn*ia* tenuifòlia (double variety) Clerodéndrum frà*g*rans, *L*upìnus rivulàris (dwarf variety), *L.* lùcidus, Chrysè*is* cròcea, Oxyùra *c*hrysanthemöìdes, Plectrìtes congésta, Collín*sia* bícolor, *Cl*ématis montàna; Calceolària péndula supérba, integrifòlia, densiflòra, viscosíssima, sulphùrea, cestriénsis, Jupiter, Vulcan, Pizarro, Pagoda, Indian Chief.

Awarded. A large silver medal to Mr. P. N. Don, gardener to J. Bateman, Esq., for orchideous plants; a silver Knightian Medal to Mrs. Lawrence, for the Eriostèmon cuspidàtum; and a silver Banksian medal to Mr. G. Glenny, and Mr. H. Fenton, for the species of Kennèdy*a* exhibited.

Award of the Judges at the Exhibition, June 10. 1837 :—

The Gold Knightian Medal. — For cut rhododendrons, to Mr. Thomas Lindsay, gardener to the Earl of Caernarvon; for a large collection of stove and green-house plants, to Mr. E. Butcher, gardener to Mrs. Lawrence, F.H.S.

The Gold Banksian Medal. — For a large collection of stove and green-house plants, to Mr. William Barnes, gardener to G. W. Norman, Esq., F.H.S.; for six stove and green-house plants, of different genera, to Mr. John Green, gardener to Sir Edmund Antrobus, Bart. F.H.S.

The Large Silver Medal. — For seedling pelargoniums, to Edmund Foster, Esq.; for pelargoniums, to Mr. William Cock of Chiswick; for pelargoniums, to Messrs. Colley and Hill of Hammersmith; for herbaceous calceolarias, to Mr. J. Green, gardener to Sir E. Antrobus, Bart., F.H.S.; for shrubby calceolarias, to Mr. John Green; for grapes, to Mr. John Davis, gardener to Lady Clarke; for pine apples, to Mr. John Davis; for melon-shaped *Cácti*, to Mr. H. Pratt, gardener to W. Harrison, Esq., F.H.S.; for heaths, to Mr. E. Butcher, gardener to Mrs. Lawrence, F.H.S.: for a collection of orchidaceous plants, to Sigismond Rucker, Esq., jun., F.H.S.; for a large collection of stove and green-house plants, to Mr. W. Redding, gardener to Mrs. Marryat, F.H.S.; for six stove and green-house plants, of different genera, to Mr. J. Lane, gardener to J. H. Palmer, Esq., F.H.S.; for tall *Cácti*, to Mr. John Green; for Russèl*ia jú*ncea, to Mr. Falconer, gardener to A. Palmer, Esq.; for *N*epénthes distillatòria, to Sigismond Rucker, Esq., jun., F.H.S.; for Borò*nia* serrulàta, to Mr. D. Douglas, gardener to the Earl de Grey, F.H.S.; for *C*lématis azùrea, to Mr. Charles Young of Epsom; for ferns, to Sigismond Rucker, Esq., jun., F.H.S.

The Silver Knightian Medal. — For heartsease, to Mr. William Hurst, gardener to Jos. Batho, Esq., of Cheshunt; for heartsease, to Messrs. Allen and Rogers of Battersea; for pelargoniums, to Mr. William Hunt, gardener to Miss Traill, Hayes, Bromley; for pelargoniums, to Mr. T. Gaines of Battersea; for herbaceous calceolarias, to Mr. Falconer; for shrubby calceolarias, to Mr. E. Butcher, gardener to Mrs. Lawrence, F.H.S.; for grapes, to Mr. C. Judd, gardener to W. Gambier, Esq., of Sacombe Park; for melons, to Mr. C. Edwards, South Lodge, Enfield Chase; for pine-apples, to Mr. R. Abbott, gardener to J. Jarrett, Esq., F.H.S.; for nectarines, to Mr. Nieman, gardener to P. C. Labouchere, Esq., F.H.S.; for hardy azaleas, to Mr. George Glenny, F.H.S.; for hardy azaleas, to Mr. Waterer, F.H.S.; for hardy azaleas, to Mr. W. Smith, of Norbiton Common; for green-house azaleas, to Mr. W. Smith; for melon-shaped *Cácti*, to Mr. Dennis of Chelsea; for a collection of orchidaceous plants, to Mr. George Glenny, F.H.S.; for Gongò*ra* atropurpùrea, to Mr. R. Abbott, gardener to J. Jarrett, Esq., F.H.S.; for a large collection of stove and green-house plants, to Mr. James Bruce, gardener to B. Miller, Esq.; for a large collection of stove and green-house plants, to Messrs. Chandler of Vauxhall; for six stove and green-house plants, of different genera, to Mr. Ferguson, gardener to P. C. Labouchere, Esq.; for *A*ristolòchia trilobàta, to Mr. G. Glenny, F.H.S.; for apricots, to Mr. Nieman; for strawberries, to Mr. Nieman; for raspberries, to Mr. Nieman.

The Silver Banksian Medal. — For heartsease, to Mr. George Bridges of Hampton; for heatsease, to Mr. King of Hillingdon Place, Uxbridge; for heartsease, to Mr. R. S. Mounjoy of Ealing; for pelargoniums, to Mr. E. Butcher, gardener to Mrs. Lawrence, F.H.S.; for pelargoniums, to Mr. W. Catleugh, of Hans Street, Sloane Street; for herbaceous calceolarias, to Mr. James Lane; for shrubby calceolarias, to Mr. James Falconer; for shrubby calceolarias, to Mr. N. Wilson, gardener to H. Bevan, Esq., F.H.S.; for grapes, to Mr. Davis; for melons, to Mr. James Bruce; for hardy azaleas, to Messrs. Chandler of Vauxhall; for six stove and green-house plants, of different genera, to Mr. G. Fleming, gardener to C. Ranken, Esq., F.H.S.; for tall *Cácti*, to Mr. Upright, gardener to G. C. Ridge, Esq., of Morden Park; for Cape Ensàtæ, to Mr. J. Lane; for succulent plants, to Mr. G. Glenny, F.H.S.; for Chorózema ovàta, to Mr. Charles Young; for Clintò*nia* pulchélla, to Mr. Toward of Bagshot Park; for *E*rìca *e*chiiflòra, to John Allnutt, Esq., F.H.S; for Deútz*ia* scàbra, to Mr. J. Spence, gardener to R. Durant, Esq., F.H.S.; for Kennèdy*a* dilatàta, to Mr. G. Glenny, F.H.S.; for Passiflòra kermesìna, to Mr. J. Conway, gardener to L. Sulivan, Esq., F.H.S.; for Calceolària viscosíssima, to Mr. Mackie, gardener to the Marquess of Hertford; for tulips, to E. Strong, Esq., of Brook Green; for tulips, to Mr. W. Pinder, of Croydon; for apples, to Mr. Alexander Forbes, gardener to H. Pownall, Esq., F.H.S.; for miscellaneous cut flowers, to Mr. H. Pratt,

gardener to W. Harrison, Esq., F.H.S.; for hydrangeas, to Mr. Redding, gardener to Mrs. Marryat, F.H.S.; for strawberries, to Mr. George Steel, of Richmond.

Meeting, July 4. 1837.—*Exhibited.* Royal George nectarines, from Mr. Errington, gardener to Sir P. G. Egerton, Bart.; Elruge nectarines, red Magdalen peaches, and black Hamburg grapes, from Mr. T. Flangan, gardener to Sir T. Hare, Bart.; Cycnòches ventricòsum, Acropèra Loddigèsii, and Stanhòpea oculàta, from James Bateman, Esq.; white Magdalen peaches, Keen's seedling strawberries, and green-fleshed melon (the Ham melon, grown in old tan), from Mr. Stewart, gardener to Lord Ashburton; a collection of irises and roses, from Mr. John Salter of Shepherd's Bush; a collection of geraniums (in pots), from Messrs. Colley and Hill of Hammersmith; Ornithógalum thyrsòides, Solànum campanulàtum, and Scopària, new species, from Mrs. Marryat, F.H.S.; cactaceous plants, from Mexico, for sale by Mr. Charlwood of Covent Garden; a collection of roses, from Mr. Hooker, F.H.S.; double yellow roses, Solànum crìspum, and rose de Lille, from William Leveson Gower, Esq., of Titsey Place, near Godstone; Erìca gnaphaliòides, ventricòsa, coccínea, v. frà̀grans, v. stellàta, v. supérba, and v. præ'gnans coccínea, from Mr. Fairburn, Clapham; Pimelèa decussàta, P. ròsea; Gésnera spléndens, G. fauciàlis; Campèlia trícolor coccínea, C. sp.; Brugmánsia bícolor lùtea, Lechenaúltia oblàta; Agapánthus, new white; Polýgala cordifòlia, P. bracteolàta, collection of cut flowers of geraniums, of heartsease, and of roses, from Mrs. Lawrence.

From the Garden of the Society. — Solànum áspero-lanàtum, Lýchnis Bungeàna, Crìnum amábile, Quisquàlis índica, Combrètum purpùreum, Antholỳza grandiflòra, Alstrœmèria pulchélla, Fúchsia díscolor, Lupìnus nànus, Eùtoca víscida, Collínsia bícolor, Oxyùra chrysanthemòides, Gília achilleæfòlia, Hosáckia sp., Æthionèma membranàcea, Pentstèmon venústus, Pæònia albiflòra Hùmei, Eriophýllum cæspitòsum, Ceanòthus azùreus álbus, Clintònia élegans, Sèdum azùreum, garden roses, and Chinese roses.

Awarded. A large silver medal to Mrs. Lawrence, for the Gésnera fauciàlis; a silver Knightian medal to Mr. Fairburn, for heaths; to J. Bateman, Esq., for Orchídeæ; to Mr. S. Hooker, for roses; to Mr. Errington, for peaches; to Mr. Stewart, for peaches and strawberries; and a silver Banksian medal to W. L. Gower, Esq., for double yellow roses.

Award of the Judges at the Exhibition, July 11. 1837 : —

The Gold Knightian Medal. — For a large collection of stove and greenhouse plants, to Mr. E. Butcher, gardener to Mrs. Lawrence, F.H.S.

The Gold Banksian Medal. — For a large collection of stove and greenhouse plants, to Mr. John Green, gardener to Sir Edmund Antrobus, Bart., F.H.S.

The Large Silver Medal. — For pelargoniums, to Mr. William Cock of Chiswick; for pelargoniums to Mr. William Catleugh, of Hans Street, Sloane Street; for grapes, to Mr. John Davis, gardener to Lady Clarke; for pineapples, to Mr. William Dodd, gardener to Edward Baker, Esq., F.H.S.; for Cape heaths, to Mr. E. Butcher, gardener to Mrs. Lawrence, F.H.S.; for Corysánthes macrántha, to Sigismond Rucker, Esq., F.H.S.; for Chinese and Noisette roses, to Mr. George Glenny, F.H.S.; for Chinese and Noisette roses, to Mr. Stephen Hooker, F.H.S.; for a collection of 50 garden roses, to Mr. Alexander Milne, gardener to C. S. Chauncey, Esq., F.H.S.; for a collection of 50 garden roses, to Mr. Rivers, of Sawbridgeworth; for a large collection of stove and green-house plants, to Mr. William Redding, gardener to Mrs. Marryat, F.H.S.; for Pentstèmon Murrayànus, to Mr. Andrew Toward of Bagshot Park; for Anigozánthos Manglèsii, to Mr. Donald M'Kay, gardener to Robert Mangles, Esq., F.H.S.

The Silver Knightian Medal. — for pinks, to Mr. Attwell, Uxbridge; for pinks, to Mr. Hogg of Paddington; for picotees, to Mr. Hogg of Paddington; for heartsease, to Mr. George Bridges of Hampton; for heartsease, to Messrs. Lane of Great Berkhampstead; for pelargoniums, to Mr. Upright,

gardener to G. C. Ridge, Esq., of Morden Park; for shrubby calceolarias, to Mr. J. Falconer, gardener to Archdale Palmer, Esq., of Cheam; for grapes, to Mr. Chapman of Vauxhall; for a melon, to Mr. H. Pratt, gardener to W. Harrison, Esq., F.H.S.; for pine-apples, to Mr. Joseph Gundry, gardener to S. Paynter, Esq., F.H.S.; for pine-apples, to Mr. John Davis; for peaches, to Mr. Upright; for nectarines, to Mr. N. Wilson, gardener to H. Bevan, Esq., F.H.S.; for Brássia Lanceàna, to Mr. Pratt; for Chinese and Noisette roses, to Mr. Alexander Milne; for Chinese and Noisette roses, to Messrs. Paul, of Cheshunt; for a collection of 50 garden roses, to Mr. Richard Helmer, gardener to R. G. Alston, Esq., F H.S.; for a collection of 50 garden roses, to Mr. Stephen Hooker, F.H.S.; for miscellaneous garden roses, to Mr. H. Cobbett of Horsell, near Woking, Surrey; for six stove and green-house plants, of different genera, to Mr. J. Lane, gardener to J. H. Palmer, Esq., F.H.S.; for alstrœmerias, to Mr. J. Falconer; for Clématis Siebóldti, to Mr. C. Young of Epsom; for Mórna nítida, to Mr. Donald M'Kay; for a hybrid between Málva Munroàna and Málva purpuràta, to Mr. Andrew Toward, gardener to H. R. H. the Duchess of Gloucester; for Brugmánsia sanguínea, to Mr. George Glenny, F.H.S.; for irises, to Mr. Brown of Slough, F.H.S.

The Silver Banksian Medal. — For pinks, to Mr. George King, gardener to Miss Fuller, Hillingdon Place, Uxbridge; for pinks, to Mr. Wilmer of Sunbury; for picotees, to the same; for heartsease, to Mr. Lidgard of Webb's Lane, Hammersmith; for heartsease, to Mr. Gaines of Battersea; for Pelargoniums, to Mr. E. Butcher, gardener to Mrs. Lawrence, F.H.S.; for pelargoniums, to Messrs. Colley and Hill of Hammersmith; for balsams, to Mr. William Scott, gardener to A. K. Barclay, Esq., of Grove House, Tooting; for herbaceous calceolarias to Mr. John Green; for Passiflòra quadrangulàris, to the Rev. F. Belfield, F.H.S.; for apples, to Mr. J. Falconer; for grapes in pots, to Mr. Robert Buck, F.H.S., Blackheath; for grapes, to the same; for melons, to Mr. J. Stewart, gardener to Lord Ashburton, F.H.S.; for peaches, to Mr. C. Barnes, gardener to P. Grillion, Esq., East Acton; for nectarines, to Mr. William Gibbs, gardener to D. Haigh, Esq., of Streatham; for Chinese and Noisette roses, to Mr. H. Pratt; for Chinese and Noisette roses, to Messrs. Wood of Maresfield, Sussex; for a collection of 50 garden roses, to Mr. George Glenny, F.H.S.; for a collection of 50 garden roses, to Messrs. Paul of Cheshunt; for six stove and green-house plants, of different genera, to Mr. D. Ferguson, gardener to P. C. Labouchere, Esq., F.H.S.; for alstrœmerias, to Mr. Gaines; for Lýchnis Bungeàna, to Mr. Spence, gardener to R. Durant, Esq., F.H.S.; for Phlóx Drummóndi, to Mr. D. Ferguson; for double yellow roses, to Mr. William Cooper, gardener to W. Leveson Gower, Esq., F.H.S.; for Alstrœmèria tricolor, to Mr. Ferguson; for Campánula gargánica, to Mr. Jackson of Kingston; for Antirrhìnum caryophyllöides, to the same; for crassulas, to Mr. F. J. Buck of Chelsea; for irises, to Mr. Lidgard.

No. IV. (See Vol. XII. p. 612.)

Certificate granted in the Horticultural Society of London on the 10th instant.

John Halliday of Craiglands, near Moffat, Dumfriesshire, *a Certificate of the First Class.*

Hort. Soc., July 13. 1837.

Art. VII. *Covent Garden Market.*

The rains which prevailed during the past and the present week have materially affected the supplies furnished to the market. The prevalent cold of the spring had materially retarded the growth of the early summer vegetables;

but the warm and genial weather in the early part of this month has, in a great measure, restored the deficiency; so that we are now supplied liberally with all the articles usually found at this season. Of peas and beans we have a great abundance, and, since the rain, of the best possible quality: prices reasonable. Of early potatoes, the supply is more than equal to the immediate demand; sales dull, and prices declining. Cauliflowers are not so fine or abundant as usual, in consequence of the heat and dryness of the weather in the early part of the month. Kidney beans are coming to hand plentifully, although the crop did not generally plant well. Cabbages have been scarce and dear throughout the season; but, in consequence of the general supply, not much in demand. Lettuces are plentiful and good. Cucumbers are in good supply, and in good demand. Of fruit we have a large crop generally. Cherries, very plentiful, and of excellent quality. Currants and gooseberries also abundant, and excellent, as well as raspberries. Of apples but few have as yet been furnished: the crop is generally large. Of pears, none as yet have been supplied, but the crop is considered good (especially of the earlier and hardier sorts), except jargonelles, and some of the tender varieties, which have again failed. Of plums some few punnets have been brought: the crop is in general good. The wall fruit, such as peaches, nectarines, &c., is certainly very short in crop. Walnuts and filberts are considered to be a short crop. — *C. G. M. July* 22. 1837.

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage, per dozen:		
White	0 0 6	0 1 0
Plants, or Coleworts	0 1 6	0 2 0
Cauliflowers, per dozen	0 5 0	0 8 0
Legumes.		
Peas, per half sieve	0 1 0	0 1 3
Peas, per sieve	0 1 6	0 3 0
Peas, per sack	0 4 6	0 7 6
Beans, Windsor, per sack	0 5 0	0 6 0
Kidneybeans, per half sieve	0 2 6	0 3 6
Tubers and Roots.		
Potatoes, per cwt.	0 8 0	0 10 0
Potatoes, per bushel	0 3 6	0 5 0
New, per pound	0 0 1	0 0 3
Turnips, White, per bunch	0 0 3	0 0 4
Carrots, per bunch:		
Young	0 0 8	0 1 0
Horn	0 0 10	0 1 0
Skirret, per bunch	0 1 3	0 0 0
Scorzonera, per bundle	0 1 3	0 0 0
Salsify, per bunch	0 1 3	0 0 0
Horseradish, per bundle	0 2 6	0 5 0
The Spinach Tribe.		
Spinach, per half sieve	0 2 0	0 0 0
Sorrel, per half sieve	0 1 0	0 0 0
The Onion Tribe.		
Onions, green, per bunch	0 0 4	0 0 8
Garlic, per pound	0 0 6	0 0 0
Shallots, per pound	0 0 6	0 0 8
Asparaginous Plants, Salads, &c.		
Artichokes, per dozen	0 4 0	0 6 0
Lettuce, per score:		
Cos	0 0 9	0 1 6
Cabbage	0 1 0	0 1 6
Celery, per bundle (12 to 15)	0 1 0	0 1 6
Pot and Sweet Herbs.		
Tarragon, per dozen bunches	0 4 0	0 0 0
Fennel, per dozen bunches	0 2 0	0 2 6
Thyme, per dozen bunches	0 3 0	0 0 0
Sage, per dozen bunches	0 2 0	0 0 0

	From £ s. d.	To £ s. d.
Mint, per dozen bunches	0 3 0	0 0 0
Peppermint, dried, per dozen bunches	0 1 6	0 0 0
Marjoram, per dozen bunches	0 3 0	0 0 0
Savory, per dozen bunches	0 2 0	0 0 0
Basil, per dozen bunches	0 3 0	0 0 0
Rosemary, per dozen bunches	0 4 0	0 0 0
Lavender, dried, per doz. bun.	0 3 6	0 0 0
Tansy, per dozen bunches	0 1 0	0 0 0
Edible Fungi and Fuci.		
Mushrooms, per pottle	0 0 9	0 1 0
Morels, per pound	0 16 0	0 0 0
Truffles, per pound:		
English	0 14 0	0 0 0
Foreign	0 16 0	0 0 0
Fruits.		
Peaches, per dozen	0 12 0	1 5 0
Nectarines, per dozen	0 12 0	1 5 0
Almonds, per peck	0 7 0	0 0 0
Cherries, per pound	0 0 2	0 0 4
Circassians	0 4 0	0 0 0
Wall Dukes	0 1 6	0 0 0
Bigarreau, wall	0 2 0	0 3 0
Gooseberries, per half sieve	0 1 6	0 2 0
Currants, per half sieve:		
Black	0 3 0	0 3 6
White	0 2 6	0 3 6
Red, for wine	0 2 6	0 3 6
dessert	0 5 0	0 0 0
Raspberries:		
Red, per gallon (2 pottles)	0 0 6	0 0 8
White, per gallon	0 0 6	0 0 8
Strawberries, per gallon (2 pottles) about 3 pints	0 1 0	0 1 6
Pine-apples, per pound	0 4 0	0 8 0
Grapes, hot-house, per pound	0 1 6	0 4 0
Melons, each	0 3 6	0 5 0
Oranges, per dozen	0 1 0	0 3 0
Oranges, per hundred	0 10 0	1 4 0
Lemons, per dozen	0 0 9	0 2 0
Lemons, per hundred	0 4 0	0 14 0
Nuts, per bushel:		
Brazil	0 16 0	0 0 0
Barcelona	1 0 0	0 0 0
Messina	0 14 0	0 0 0

THE

GARDENER'S MAGAZINE,

SEPTEMBER, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 7. ROSE MOTHS.

No florist's flowers are more highly prized, both by florists and garden-lovers in general, than the rose; and, at the same time, there is scarcely any plant which is more liable to the attacks of insects. Not to mention the aphides, which occasionally swarm to so great an extent, at certain seasons, on particular varieties, as to render the plant too weak to be able to accomplish its flowering; the saw-flies, several species of which feed upon the leaves, in the larva state; the mining *T*ínеæ, whose larvæ render the leaves unsightly by tracing their serpentine track within the substance of the leaf; the leaf-cutter bees (Megachìle), which cut out circular patches from the leaves to form the lining of their cells; or a species of the curious genus Lỳda (belonging to the family *T*enthredínidæ), whose habits I have investigated, and which constructs a large portable case of pieces of the leaves, which it ingeniously cuts out, and then fastens round its body in a spiral direction, a course of proceeding quite unlike any thing hitherto observed in the family to which it belongs; there are yet several small species of moths, which, in the caterpillar state, are still more injurious than all these, by gnawing away the tender parts of the shoots and buds whilst very young, so that, when the bud attains its full size, it is found to have half of the petals devoured; besides the ugly appearance given to the plant by the leaves being fastened together, prevented from assuming their ordinary elegant appearance, and partially devoured. Hence, it will be easily conceived that these insects are far more obnoxious to the rosarium than any of the others mentioned above; and, indeed, they are sometimes so numerous, especially in the early-blowing varieties, that it is as common to hear the ordinary presence of a blight on the rose

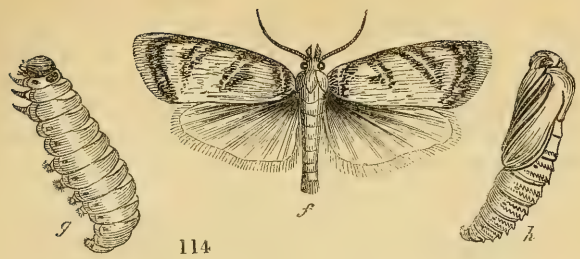
trees attributed to the appearance produced by an attack of these insects, as upon any other tree.

There are several species of moths which agree in their habits of attacking the roses in the manner above mentioned: they belong to the family Tortrícidæ, constituting the Linnæan section Tórtrix. Amongst them are to be mentioned especially, Lozotæ`nia rosàna *Linn.*, L. oporàna *Linn.*, L. nebulàna *Steph.* (rosàna *Haw.*), and L. lævigàna *W. V.* Of the last, Mr. Stephens (*Brit. Ent. Lepidopt.*, vol. iv. p. 74.) says that the caterpillar feeds on the buds of the rose, despoiling them of their beauty, and is very destructive in gardens. In his own garden he found it a perfect pest, from the havoc its larva created among the rose trees. Spilonòta aquàna (*Steph.*, loc. cit., p. 91.) is another rose-feeder, as is also Dictyópteryx Forskaol*eàna* Linn., Steph., which is destructive to the centifolious roses, according to Bouché. (*Garten Ins.*, p. 112.) Spilonòta cynosbatélla, according to Linnæus, feeds upon the buds of the rose. (*Syst. Nat.*, p. 887.). I have, however, reared it from the leaves, which it fastens together, forming a silken web between them, in which it becomes a chrysalis. It is figured by De Geer (*Mémoires*, vol. i. pl. 34. fig. 5.). Pteróphorus rhododáctylus, also, according to Fabricius, feeds on the roses; and Antithèsia salicélla *Linn.*, *Steph.*, is called the Provins-rose moth by Berkenhout (*Syn. Nat. H.*, vol. i. p. 147.), its caterpillar feeding on rose leaves.

The species which I have found most troublesome at Hammersmith this year is the following: —

Order, Lepidóptera *Linnæus.* (Powder, or scale, winged insects.)
Section, Noctúrna *Latreille.* (So named from flying by night, corresponding with the Linnæan genus *P*halæ`na.)
Family, Tortrícidæ *Leach.* (So named from the Linnæan section Tórtrix, with which it nearly corresponds.)
Genus, Argyrotòza *Stephens.* (Generic name derived from a Greek word, signifying "decorated with a silver arch," from the markings of the wings.)
Species, Arg. Bergmanni*àna* Stephens. (*Cat.*, No. 7113.; *Illustr. Brit. Ent. Lepid.*, vol. iv. p. 173.) Tórtrix Bergmanni*àna* Linn. (*Syst. Nat.*, vol. ii. p. 878.; *Donovan's Brit. Ins.*, vol. v. pl. 157. f. 1 — 6.; *Bouché Gart. Ins.*, p. 110.; *Haworth's Lep. Brit.*, p. 404.)
Syn., Tórtrix rosàna *Hubn. Tortr.*, pl. 22. f. 137.)

This beautiful little moth (*fig.* 115. *a*, natural size; *fig.* 114. *f*, magnified) is thus described by Mr. Stephens:—"Anterior wings yellow, clouded with fulvous, and obscurely reticulated with the same; with four slightly curved nearly equidistant streaks of silvery dots; the first abbreviated and near the base, the second before the middle, the next rather behind, extending obliquely to the anal angle, and the fourth on the hinder margin itself; cilia pale yellow: posterior fuscous, with dirty yellow cilia. Head and thorax sulphur-yellow. Extremely abundant in hedges



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and gardens, by the sides of woods, &c., throughout the metropolitan district, and in most parts of England at the end of July and beginning of August."

This is one of the smallest and most splendid species of the family to which it belongs. Great care is, however, required in obtaining specimens in all their beauty, as they soon rub off their golden and silvery scales, and the least touch on the wing spoils their hues. The caterpillar commences its attacks on the leaves as soon as they appear; but, owing to the lateness of the present season, it was not until the middle of June that they were most obnoxious. Its general mode of proceeding is to attach two or more leaves together with fine silken threads: this it does frequently with leaves which may happen to come in contact with each other; but it prefers those which grow close together. It often selects the leaves upon a single stem whilst yet young, and these it contrives to fasten together, back to back, before they are expanded, giving the packet the appearance of a fan folded up. (*fig.* 115. *d.*) The insect then pierces a hole through the mass, attaching the leaves together with silken cords, which prevent them from flying apart. It is thus provided with an ample supply of food; and the outer leaves, which, notwith-

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standing their being fastened together, make an effort to grow, are forced out of their natural position, and become distorted and unsightly, the holes bitten by the insect increasing in size, according to the growth of the leaf. In like manner, they delight to fasten one or more leaves upon the surface of a bud whilst very young, which serves them as a defence beneath which they devour part of the petals of the bud as well as the leaf. (*fig.* 115. *e.*)

The caterpillar (*fig.* 115. *b*, natural size; and *fig.* 114. *g*, magnified), when disturbed, quits its retreat, running backwards very quickly, and leaving a web, which it spins from its mouth, and by which it will often suspend itself from the leaf in the air. It is of a fleshy substance, and of a dark flesh colour, with a black shining head. There are 2 black patches on the upper side of the 1st segment, and the 2 following segments are spotted with brown. It has 6 short black articulated legs, attached in pairs to the first 3 segments of the body after the head. The 4th and 5th segments are simple; but the 6th and 3 following segments are respectively furnished, as well as the extremity of the body, with a pair of short fleshy false legs (prolegs), which are employed in motion, and which are of a dark flesh colour. The extremity on the upper side is brown, and a few hairs are scattered about the body.

When full grown, it either attaches two leaves together with silken threads, leaving a space between them, which it lines with silk; or it curls up the edge of a leaf, fastening it with threads so as to prevent its unfolding, and lining the curved part in a similar manner. Within the retreat thus made it assumes the chrysalis form, casting off its caterpillar skin: it is generally about the end of June that this operation takes place. The chrysalis (*fig.* 115. *c*, natural size; *fig.* 114. *h*, magnified) is of a shining pale reddish brown colour, of the ordinary form, without any of those angular projections which are to be observed in the chrysalides of some butterflies: each of the abdominal segments is, however, remarkable for having two rows of minute points, or hooks, directed backwards, as in the chrysalis of the goat moth, the use of which is to assist the chrysalis in pushing itself partly out of the whorl of the leaf, previously to assuming the perfect state; by which means the little moth becomes at once at liberty, and is not under the necessity of working its way through the curled-up leaf, which may now, perhaps, have become dry and shriveled. The body is terminated by a curved horny hook. In the present season, these insects arrived at the winged state about the middle of July.

The extirpation of these insects is matter of difficulty. They are, it is true, very conspicuous in the winged state; and, if care were taken to employ children in catching and killing them just

at the time when they make their appearance as moths, the laying of the eggs would be prevented, and the trees saved from the next year's broods. Bouché, however, recommends brushing the twigs of the rose in the winter with a stiff brush, which would have the effect of destroying the eggs; but as these are deposited in the most secure places, at the roots of the eyes and under the base of the young twigs, there is some danger and much difficulty in this method. An inspection of the trees in the early spring, before the insects have done much damage, will easily show the places of lodgment of the larvæ, which may then be readily destroyed by the hand.

Moreover, they have natural enemies belonging to their own class. I have this year reared two ichneumons, nearly as large as the moth itself, from one chrysalis. They are of a black colour, with pitchy red legs, and beautifully iridescent wings. A species of sand wasp, belonging to the genus Odynèrus, also collects these caterpillars, of which it lays up a store in its cells for its progeny; and I was greatly amused by watching the proceedings of a sand wasp in attempting to dislodge one of the larvæ from its stronghold in the leaves. After pacing about the tree, and endeavouring, apparently with its antennæ, to discover the retreat of the hidden caterpillar, it paced more demurely about a packet of leaves, and introduced its sting into the substance of the leaf; immediately after which it ran to the edge of the whorl, in order to ascertain whether the larva was endeavouring to make its escape from its unknown enemy. It repeated this operation several times; so that I was convinced its object in wounding the leaf was to alarm or, perhaps, slightly wound the larva, so as to cause it to quit its retreat, when it would have been pounced upon and carried off, to be laid up, with others of the same kind of caterpillars, as a store of food for the future progeny of the wasp.

ART. II. *Instructions for Truffle-Searching.* Translated from the German of V. F. Fischer. By FRANCIS MASCALL, Esq., of Eppleton, Durham.

[IT has frequently been suggested to us, that the cultivation of the truffle would form a very fit subject for premiums to be offered by the principal Horticultural Societies; and a friend has been kind enough to translate for us this article and the following one. Could the truffle, indeed, be subjected to cultivation as effectually as the mushroom, it would be one of the grandest triumphs of horticultural skill; and it would contribute towards rendering of general use an article of luxury which is now enjoyed but by few, and which would prove an additional source of industry and profit to the market-gardener. In our opinion,

a premium of 100*l.* would not be too much to offer for the successful propagation and cultivation of this fungus.]

Preface of the Translator. — The translation of the following treatise on truffle-hunting properly precedes that on the cultivation of truffles; as well because the tubers are directed to be planted in ground prepared for their cultivation (which cannot be done unless they are previously found), as because the difficulties attending their cultivation are mentioned in the first-mentioned treatise, in such a manner as to induce strict attention to the precepts laid down in the second. The pamphlet has the following title: *Anleitung zur Trüffeljagd, ein Beytrag zur Forst- und Jagd-Wissenschaft;* von V. F. Fischer, Karlsruhe, 1812; bey Mohr und Zimmer in Heidelberg. It, as well as the treatise on the cultivation of truffles, has been carefully translated, as it seemed important that the ideas of those whose endeavours, either in the search or cultivation of these singular productions, had been crowned with success, should be faithfully presented to the reader: more especially as the attempts, both of cultivators and philosophers, of all former ages, and of all civilised countries, to multiply truffles like other vegetables, have, till a few years ago, been completely baffled. — *F. M.*

§ 1. *The Inducement to this Work.* — "Is any thing printed wherein instructions are given for what is usually called truffle-hunting, or truffle-searching, and for training such dogs as are required in it?" Such was the enquiry made in the esteemed *Forest Journal* of Hartig, by an anonymous person who wished to know the title of such a work, or to read in that journal a short treatise upon the subject. The celebrated editor of that publication added the following remark to his correspondent's query: "The only treatise with which I am acquainted (and that is by no means a complete one), on what is called truffle-hunting, is in the *Manual of the Practical Forest and Hunting Departments*, part iii. p. 316. A complete treatise on this subject would assuredly not be unacceptable to the readers of this journal."

Many readers of the *Forest Journal*, in consequence, looked eagerly forward to a complete treatise on this subject, a subject upon which so little had as yet been written. But alas! very soon after this the publication of the *Journal* ceased, and the wishes of the person who first mentioned the subject, as well as those of M. Hartig and his readers, remained unsatisfied; and, notwithstanding the multiplicity as well of authors as of compilers, no work upon this subject appeared. I previously possessed some theoretical and practical knowledge of truffle-searching; and, from vicissitudes in the nature of my office, had an opportunity of extending the latter, by the actual exercise of

my employment in the company of experienced truffle-hunters. This is the reason of my publishing the present work, which, though it lays no claim to be considered a complete treatise, yet perhaps may be more satisfactory than the former ones, that are generally to be found dispersed in dictionaries of natural history or of husbandry. Of these the best seems to me to be that in the *Natur-und-Kunst-Lexicon* of Lippold and Funke, vol. iii., article Trüffel.

I. The Natural History of the Truffle.

§ 2. *Classification.* — Two esteemed botanists (Braune in his preface to the third part of the *Flora of Salzburg*, and Borkhausen in his *Botany*, § 3. and 412.), in their subtleties, have denominated mushrooms the spectres of the inanimate vegetable kingdom; and the immortal Linnæus, in his *Regnum vegetabile*, still more unaptly calls them vagrants and barbarians, a thievish race, voracious creatures, &c. He, who in a capricious fit chooses to give an equally suitable appellation to truffles, may call them the gnomes of the immaterial vegetable kingdom; for they are only a kind of mushroom which grows under the surface of the earth, and are for the greater part of their existence externally invisible; being observable only for a short period, and by certain favoured animals, after which they speedily undergo dissolution.

By some botanists, mushrooms or fungi are assigned to an intermediate kingdom; by a very few they are referred to the animal kingdom; but by most they are retained in the vegetable kingdom. That they are not properly organised plants is correct, for they want most of the characteristics of plants. No distinct organs of generation, no decided seeds, have as yet been observed in them, and no one has, as yet, succeeded in methodically increasing them by artificial cultivation, on the same principle as other vegetables, with the exception of the garden mushroom. Truffles are usually developed where vegetable life ceases, and where the first step of the decomposition of vegetable matter has commenced, under the requisite degree of moisture, warmth, and light.

The counsellor of regency, Medicus of Mannheim, lately deceased, a very excellent botanist, in his theory upon the formation of truffles, which has great merit, calls them educts, not products, of the vegetable kingdom, and endeavours by the idea of a vegetable crystallisation, to present to the senses the manner of their coming into existence, in which they assume determinate forms, from which they never vary. Other vegetable physiologists brought the former seed theory upon the tapis, and endeavoured to place it beyond a doubt, that fungi are simple plants, with most simple imperceptible organs of generation.

(See F. C. Medicus, *Pflanzen-phusiologische Abhandlungen*, 3tes bändchen; Leipzig, Gräf, 1803; Borkhausen's *Botanical Dictionary* (Borkhausen's *Wörtbuche*, Giessen, 1797, 2ter theil, seite 210.); and Funke's *Lexicon of Natural History*: in which works are found, at length, the different opinions of their authors on the formation of fungi). In the eleventh edition of the *Systema Plantarum* of Linnæus, truffles are arranged in the class of plants with invisible organs of fructification, and their place is there assigned in the genus of dust or globular fungi (Lycopérdon); in the family of subterraneous globular fungi (Lycopérdon subterràneum), which comprehends three species, the name Lycopérdon *Tùber* being given to them.

Later botanists have established a new genus, viz. *Tùber*, comprehending four species, and have called the edible truffle, *Tùber* gulosòrum. The French call them truffes; and the Italians, tartufi.

We shall distinguish and describe two kinds which are found in the neighbourhood of the Rhine, although our principal object is the black edible truffle.

§ 3. *Description of Truffles.* — *The edible truffle* is, as has been already mentioned, a globular fungus. When ripe, it is covered with a black, or often a dark brown, nearly regularly shaped (generally having six sides), chapped, hard, and rough rind or shell, which has nearly the appearance of a fir cone before it opens. Later botanists in their description of this rind are often indistinct, and call it merely wrinkled. Geoffroy the younger, as early as the year 1711, in his treatise entitled *Observations sur la Végétation des Truffes*, very correctly observes its regular form, saying: "*Les Truffes sont couvertes d'une espèce de croûte dure, chagrinée, et gercée à sa superficie, avec quelque sorte de régularité, telle à peu près qu'on l'apperçoit dans la noix de cyprès.*" No fibre, no small root, is to be seen on this rind, and when the truffle is carefully dug out, it generally leaves the form of its rind behind it, just as if it had been pressed against the clay or loam, for the purpose of making an impression. Its shape is sometimes globular, or of a longish round or oval, but sometimes like that of a kidney, and it has on the surface an appearance like tuberous plants, sometimes having protuberances and sometimes depressions. The truffle, when cut, shows a difference in its texture and colour. It is generally of a netted, cellular, veiny consistence. It is often watered, of a dirty white, sometimes flesh-coloured, or clouded with grey; but most generally, and especially in the vicinity of the Rhine, marbled of a dark or light brown, and, when this is the case, is always strongly veined with white, or mottled like the nutmeg. This difference of colour depends upon the earth in which the truffle is produced, upon its situation, upon the place in which it is

found, and also upon its age; for all our brownish ripe truffles are, till they are nearly ripe, more or less of a whitish colour.

In the veiny consistence of truffles are many cavities, filled with vegetable mucus, in which are contained several small dark points. These, some take for seeds, and some for the embryos of other truffles that have received their form, and, increasing in size, grow after the dissolution of their parent.

The flesh of truffles is solid, partly juicy, and partly dry like the kernel of many fruits of trees; for instance, like that of the oak, hazel, &c. It is either mealy or soapy to the touch; and, when raw, has a somewhat sweet, but peculiar, taste. Before it is ripe, the truffle has no other smell than that of the mouldiness of fertile earth, or decayed vegetables; and in that state, therefore, is not easily perceived and found by animals that have a delicate sense of smelling; but as it approaches to ripeness, it attains the truffle smell so agreeable to epicures, which, at first, is fragrant, and often like musk; as it is nearer being ripe, it become sharper and more urinous; and when too ripe, or going back, and putrescence or insects have begun to make their attacks upon it, is disagreeable, and nearly resembles the smell of a cow-house. There are also truffles, in many places, which diffuse a strong smell of garlic, many of which are found in a small district of the Weingartner Forest. In husbandry, in trade, and by some botanists, they are, according to their colour, smell, and taste, considered as different species; but most botanists look upon these kinds only as varieties. There is as yet much obscurity in the mode of ascertaining the different species of fungi. Many species, even of truffles, may incontestably be discovered, with respect to which, regard, in my opinion, should not be had to one peculiarity alone, but to several taken together; and especially to the place where they are found, to the soil, and to their being produced at one and the same time, in one and the same spot. In a ripe state, truffles are observed by divers animals, even when deep in the earth, and found, as we shall learn, by the assistance of certain species of them.

There are ripe truffles, from the size of a bean to that of a large fist, and from a pound to a pound and a half in weight. Heavier ones were unknown to Geoffroy. I have never seen heavier ones found, and I do not believe that there are truffles, as some maintain, of from twelve to fourteen pounds' weight.

Here and there ripe truffles are indeed met with the whole year through; but the most of them ripen from the middle of August, especially when rains fall about that time, till late in autumn, when frosts come on.

§ 4. *The Swine-truffle*, which, in this neighbourhood (Carlsruhe), grows along with the black edible truffle, is, in its external colour, its shape, and particularly in its smell, essentially different

from the common edible truffle. By some botanists, however, it is esteemed to be the same in a young state, and by others is said to be a variety. It has a leathery, thin, yellowish red rind or skin, covered with small dark warts. Its juicy flesh is, for the most part, of the colour and consistence of that of the edible truffle. It is, nevertheless, very often more coarsely marbled. Its taste, when raw, is not equal to that of the edible truffle, and its smell is unpleasantly sour, nearly approaching to that of the swine, from which it derives its name. Many writers, following each other, enumerate the longish round truffles amongst swine-truffles, and reject the use of them. I have, however, found this quite incorrect. The external form is very various in truffles, and cannot alone afford any characteristic.

When ripe it usually attains the size of a bean, or that of a small walnut, but sometimes that of a hen's egg. On account of its disagreeable taste and smell, it is not eaten; and therefore when it is abundantly met with, it is by no means welcome to the truffle-hunter, but is immediately thrown away. My own observations have sufficiently informed me that it belongs to a peculiar species, and that therefore it properly ought to be called *T*ùber, or Lycopérdon, suìle.

§ 5. *Origin and Habitat of Truffles.* — The circumstances under which truffles are produced, viz. their growth, and the place where they are found, particularly deserve the attention of truffle-hunters and foresters; in order that they may be able to calculate, from what wood districts, by means of obtaining these astonishing productions, an accessory advantage may be procured. They are met with in mould formed from decayed vegetables, or in the upper stratum of earth which consists chiefly of vegetable soil, in ploughed land, and especially in a sand which is mixed with vegetable mould. A proper degree of shade seems to be essentially requisite to their production, and they are generally met with in thinly planted forests, in which rain and warmth can easily operate upon the ground, as also where there are small groups of trees. They are principally found in thinly planted oak woods, which have either no underwood, or at the most, only thorn bushes that are quite stunted, or other single bushes. They are also found in thinly planted pole woods of different kinds of trees, of from forty to sixty years' growth, which contain timber trees of oak and beech; thirdly, also in districts which are covered with pollards of hornbeam, elms, maples, &c., along with which there are a few bushes. They are always most abundant under oak trees, as it has been long ago observed. They there generally lie near to the stem, amongst the roots, but sometimes at a distance from them. They grow in the woods near the Rhine, and almost as

numerously under the roots of the whitethorn (*Cratæ`gus Oxyacántha*), which shoots up with difficulty in thinly planted woods and pollard districts, as under the oak. Single ones are also found at the roots of other trees, and even at a distance from all roots, under thin and not matted grass and similar plants. That they are never found under apple, pear, and nut trees, that where a truffle lies no grass or herbaceous plant will grow, and that this is caused by the exhalation of the truffle, as some maintain, is incorrect, and contrary to experience. I have often been an eye-witness that truffles have been dug out from under pear and apple trees, as also out of tufts of grass, and soil covered with grass seeds.

In shady, moist, and fertile soil, truffles grow larger, and lie nearer the surface, than in dry and barren places, that are not shaded. In the first, they often rise with one half above the earth, so as to be exposed to sight; or they lie 1 in. or at most 2 in. deep, and grow to the largest size that truffles ever attain. In the last situations, however, they are often dug out from the depth of 6 in. and only as large as a hazel nut. But it is not merely by the truffles rising above the surface of the earth, and appearing to the sight, that they are discovered, there are other indications that betray their hidden existence. In districts where truffles of the sort described grow, the earth in certain places is frequently arched up in the form of a hemisphere, having cracks or clefts in it: one or more truffles are usually the cause of this. An insect which pierces truffles and deposits its eggs in them, a species of fly in considerable numbers, often continues where truffles lie hid, and is, as I have often observed, chased away by the search. Funke, in his *Lexicon of Art* (*Kunst-Lexicon*), endeavours, though vainly, to deny this indication; which, indeed, is of no use where truffles are sought for by the aid of dogs.

Truffles are sometimes found singly, sometimes a good many together, in which latter case however, as may be easily supposed, they are of different sizes, and are never so perfect, as when only a single one is found, or a few are found together in a favourable situation. Weidenbach, the most experienced truffle-hunter in the neighbourhood of Carlsruhe, found last autumn (1811), in my presence, under the roots of a whitethorn, more than thirty truffles of different sizes, from that of a pigeon's egg, to that of a bean. This, as he assured me, was the only instance of his having found so many together. He had never before found more than from twenty to twenty-two together, in a practice of more than thirty years.

In Piedmont and Upper Italy, truffles are said to be found in stubble-fields, vineyards, and meadows. Whether this be correct or not, I pretend not to determine. Notwithstanding

many enquiries, I have never learnt that a truffle was ever found in Germany in an open space entirely devoid of trees.

Truffles are extended over the whole surface of the earth, and are natives as well of the cold north, as of temperate and hot climates. Linnæus found them in Lapland, and Kæmpfer in Japan, where also they are eaten as a delicacy. They are dug up in Africa, America, and in great abundance in many parts of Asia. They are found principally in the temperate countries of Europe, in England, Spain, and France, especially in the south of that country; in Italy, in Switzerland, and in the north and south of Germany. In the last country they are abundant in the kingdom of Würtemberg, and in the Grand-Duchy of Baden, along the Rhine.

§ 6. *Propagation of Truffles.*—Notwithstanding the numerous plans which have been formed, and the many experiments which have been made, to effect the propagation of truffles by art, none, to the best of my knowledge, have succeeded. Even in the neighbourhood of Carlsruhe, the experiments made by the late Margravine Caroline Louisa of Baden, the grandmother of the present most illustrious grand-duke, an excellent, ingenious, and learned lady, who was very much attached to natural history, were attended with no favourable result.

Truffles were several times taken up uninjured, with the earth surrounding them, without their being displaced from it, and again planted in the same circumstances under which they had originated: but they always underwent dissolution; and no increase or renewal of them succeeded, which, however, must have taken place, if the truffles had contained either seeds or embryos. Bradley, Von Justi, Count Borch, and Bulliard, have in their writings, respectively, proposed plans for the propagation of truffles. They say that a soil should be made choice of for the purpose, which resembles as much as possible the soil in which truffles are produced; that it should be dug about two or three feet deep: furrows or trenches should then be drawn through it, into which pieces of earth should be put or sunk, in which many truffles have grown, or even single truffles may be stuck into it. Whether these plans have been already carried into execution, and have had a more fortunate result than the experiments which have been made in our country (Carlsruhe) is to me unknown; but, though I much doubt it, I am not inclined entirely to decide against the possibility of planting truffles artificially, since success has been attained in the cultivation of other fungi. Many requisites for the formation of truffles seem only to be covered with a thick veil, which futurity, and the exertions of diligent natural philosophers, will perhaps raise or remove.

§ 7. *The Enemies of Truffles, and the Remedies against those*

Enemies. — Man does not alone seek after truffles, which he places on the tables of the rich; both wild and domestic swine are fond of this delicacy. In the woods of which these animals are natives, man may save himself the trouble of endeavouring to obtain truffles for his palate; as, in this instance, they do not share so fairly with us, as they did the acorns with our forefathers; they not only collect and root out the truffles in order to eat them, but by turning over the soil, they prevent their formation.

The badger also, as well as the swine, is fond of truffles. The gamekeeper, seeing the soil broken, often says: "A badger has pricked, or has rooted, here." This expression, in places where truffles are found, means, when translated from the hunter's language: "Here a badger has eaten a truffle." The red deer are remarkable for seeking and eating a peculiar kind of globular fungus or truffle, which is called the hart-truffle, *hart-rut truffle* (*Tùber cervìnum*), and they also consume edible truffles; the roebuck, as I have been assured, is also very fond of them, As domestic dogs are made use of in the search for truffles, and sometimes eat them very greedily, it is not to be doubted that the wild dog and the fox often dig for them. Squirrels, mice, and red wood snails (*Lìmax rùfus*), I lately saw feeding upon this delicacy.

Besides these enemies, many insects lay their eggs in truffles, and dispose them to putrescence, or at any rate render them useless; because the larvæ which arise from these eggs pierce the truffles through and through, and impart to them a bitter taste. Geoffroy observed two kinds of flies which pierce the truffle, one blue or violet, the larvæ of which dwelt in the sound truffle, and a black one whose larvæ inhabit the decayed truffle. Morand, and Reaumur observed the larvæ of another fly, which is of a red brown colour. (See *Mémoire sur les Vers de Truffes, et sur les Mouches qui en proviennent*, par Morand, Mem. de l'Académie Royal des Sciences; année 1782; Paris, 1785: and Reaumur's *Mémoire pour servir à l'Histoire des Insectes.*) Together with these flies, I discovered a beetle in truffles which pierces them in great numbers, making burrows through them, which it continues in the earth. It is a species bostrichus (Bóstrichus *Fabr.* 5 *D*erméstes *Linn.*), and of the size of the beetle that destroys the bark of the firs (*D*erméstes pinipérda *Linn.*); but is nevertheless of a lighter red-brown colour, has no hair, and no indentations on the wing-coverts.

§ 8. *The Use of Truffles.* — Truffles are made use of as food; but not being found every where, they are consequently rare and dear, and seldom appear except on the tables only of the rich. They were known as a delicacy by the ancients, and were especially esteemed amongst the Romans, as a dainty and

favourite dish. Dioscorides and Pliny make mention of them; the latter (*Hist. Mund.*, lib. xix. cap. 2.), in particular, relates an extraordinary circumstance which happened at a Roman truffle feast. As Lartius Licinius, the Roman prætor at Carthagena in Spain, was eating a truffle, he bit a penny piece (denarius), a small Roman silver coin. Whence Pliny infers truffles arise from the accretion of matter deposited in the earth, which fact Geoffroy endeavours to disprove.

They are very nourishing, and are said to be strong stimulants. They are often eaten, peeled raw, thinly sliced and then soaked in wine, or only roasted in ashes. The art of cookery teaches us how to prepare them in many different ways, and to make them very palatable; they are used as an addition and seasoning to meat pies, sauces, and ragouts, and a particular dish is made of them nearly alone. They are also used for stuffing turkeys, &c. In medicine they were formerly employed, when boiled, as a cataplasm for the quinsy; but now like many other medicines in that disorder are but little esteemed. Many physicians prohibit their being eaten, and ascribe colic, palsy, and other disorders to them. The classical Frank, in his *Medicinal Policy*, vol. iii. p. 309., also points out certain consequences as proceeding from their immoderate use.

In trade, truffles perform an inferior part, they are marinated (salted, and afterwards preserved in oil and vinegar), and sent principally from Aix, Avignon, Bordeaux, Perigord, Cette, and Nice, to all the principal towns of Europe, where they are served up at table even in winter. The merchants have different ways of preserving them. Some, after they are dug out, immediately wrap them, whilst fresh, in waxed paper, lay them into a glass from which the air is extracted, and set the glass in a larger vessel filled with water. Others merely dip them in oil or fat, by which means, the effect of the air, and in some degree, dryness, withering, and decay, are for a time prevented. In trade, truffles are distinguished by different names, which have relation partly to the place where they are found, as Perigord truffles; and partly to some peculiarity in themselves, as white truffles (bianchetti), &c. They are sold in the neighbourhood of Carlsruhe, and in other places where they are found, at two florins (about half a crown) per pound, and cost when sent to a distance, especially in winter, from six to ten florins (from 7*s.* 6*d.* to 12*s.* 6*d.*) per pound. In the arts, as far as I know, they are not used. In London they sell at from 7*s.* to 16*s.* per pound.

§ 9. *Literature relating to Truffles.* — To those who wish to read more of the natural history of truffles, omitting the ancient writings of Dioscorides, Pliny, Matthiolus, Tournefort, and others of less consequence, I recommend the following treatises

and larger works : —1. Mentzelius, *Pugillus rariorum Plantarum.* 2. *Sur les Truffes, et Observations sur la Végétation des Truffes,* par M. Geoffroi le jeune, in *Histoire et Mémoires de l'Académie Royale des Sciences,* année 1711 ; Amsterdam, 1715. 3. Dr. Bruckman, *Spec. botan. exhibens Fungos subterraneos, vulgo Tubera Terræ dictos ;* 4to, 1720. 4. Micheli, *Nova Plantarum Genera, &c., Florent.,* gen. 221. tab. 102. 5. Bradley, *Physical Observations on Gardening.* The same in French, *Nouvelles Observations physiques et pratiques sur le Jardinage et l' Art de planter,* tom. ii. p. 208., et tom. iii. p. 263., translated from the English. 6. Gleditsch, *Methodus Fungorum, exhibens Genera, Species, Varietates cum, Charactere, Differentia specifica, Synonimis, Solo, Loco, et Observationibus,* Berol. 1753, p. 157. n. 6. 7. V. Justi, *On the Cultivation of Truffles,* in his economical writings, 1st vol., Berlin and Leipsig, p. 210. 8. *Lettres sur les Truffes du Piedmont,* par le Comte de Borch, à Milan, 1780, 1789. 9. Linnæus's complete *Systema Plantarum,* after the 14th Latin edition, &c., 13th part, 1st volume of the cryptogamic plants, Nurnb. 1786. 10. Kerner, *The poisonous and edible Fungi which grow wild, as well in the Duchy of Würtemberg, as in the rest of Germany,* 1786, p. 65. 11. Batsch, *Elenchus Fungorum, accedunt Icones Fungorum nonnullorum Agri Fenensis ab Auctore depictæ, æri incisæ, et vivis coloribus fucatæ ;* iii. partes (to 1789, with 232 figures, a German and also a Latin text). 12. Bulliard, *Histoire des Champignons de France, ou Traité élémentaire renfermant dans une Ordre méthodique les Descriptions et les Figures des Champignons qui croissent naturellement en France ;* Paris, 1791 ; avec, 177 estampes. 13. Lippold and Funke's *Lexicon of Nature and Art,* 3d part, 1804, under the article Truffle.

In some of these works no mention is made of truffle-searching ; in others, the subject is dismissed in a few words. From them, therefore, the reader can expect to glean but little on the subject upon which we are now about to treat.

II. Truffle-Hunting, or Truffle Search, in particular.

§ 10. *General Remarks on Truffle-Hunting, or Truffle Search.*— The act which has for its object the getting possession of wild, useful, or injurious animals, by searching for them according to art, and catching or killing them with an apparatus to that effect, and for the most part by the assistance of domestic animals trained for the purpose, is commonly called hunting. To the obtaining of other natural productions from other natural kingdoms, unless we speak figuratively, we cannot apply the term "hunting," although at the same time many individual marks of the idea may occur. The searching for and obtaining of truffles, which are a product of the vegetable kingdom, cannot therefore be properly called truffle-hunting,

since the taking up of better-organised bulbous roots is certainly not called hunting. No indication of the idea of hunting occurs in the acquisition of truffles, except that they are usually sought for by trained tame animals, and by particular persons whose employment it now is; though this has not exclusively, or for a considerable time, been the case. It would be better, therefore, to make use of the term truffle-searching than truffle-hunting, as some writers who make slight mention of truffle-hunting have very properly observed; for example, Justi in his *Technological Dictionary*, and the editor of the *Practical Forester and Gamekeeper*, and several others. In the mean time this shall not prevent us from making use of the expression that has been adopted, and has once been current; the question here is merely a verbal one, and *in verbis simus faciles*. The use of an expression is not, however, entirely a matter of indifference, inasmuch as it may easily mislead us to adjudge the benefit of truffles to the chase, and to him who has the right of hunting, as in many countries is actually the case. It by no means belongs to the chase, but to the beneficial interest in the forest or wood; because it occurs almost exclusively only in woods and wood soil, and not throughout the whole hunting district. In the proper sense of the word it can be specially enumerated only amongst the accessory advantages of woods.

The truffle search is practised in various ways: methodically, by proper truffle-hunters with dogs or swine that are trained, in which way only ripe truffles are found; or by arbitrary irregular digging, in those places where indications of the existence of truffles are perceived, in which way truffles of all ages are got, and many embryos (if I may use the expression) are destroyed, the further formation of truffles is prevented, and the truffle district ruined.

The last kind may be compared to what the unsportsmanlike chase of hunting a trail is in hunting, or the unforesterlike use of the productions of the forest is in the management of a forest, and ought by no means to be permitted, but always punished as a forest prodigality. Besides, truffles in later times have become considerably more rare. The many falls of woods, and exterminations of forests, which have been occasioned by the present wars and the former calamities of the country, the increase of population, and the converting of many woods to other purposes, have in several districts in a great measure extirpated truffles, and consequently they ought not to be made still more scarce, and in whole districts entirely destroyed.

I shall, therefore, speak more at large only of the methodical truffle-hunting with dogs, by means of which that with swine has been, in later times, in a great measure supplanted; and

which former mode, as far as I am acquainted with both, deserves the preference. I shall treat of that with swine only superficially.

§ 11. *How long Truffle-Hunting has been practised.* — The methodical search of truffles with dogs or swine seems to be a device of later times; for I have discovered no traces of it in ancient writings. Accordingly, the ancients appear to have sought for truffles in the destructive mode above mentioned; viz. by digging up whole districts.

In Italy, France, and Spain, where rare and exquisite delicacies were more and earlier esteemed, this mode of truffle-searching was earlier known than in Germany. Nevertheless, as may be conjectured from an observation of Geoffroy, it was not practised in the first-mentioned countries before the middle of the seventeenth century; and in the beginning of the last it was transferred to Germany. Stisser, in his *History of German Forests and Hunting*, 1st ed. 1738, chap. vii. sect. 65., informs us that, in consideration of his yearly delivering a quantity of truffles, a privilege for the searching for truffles in the principality of Halberstadt was first given to Bernard Vanino, an Italian; and that the proper hunters had nothing in common with the truffle-hunters.

In the court of the Grand-Duchy of Baden, the first truffle-hunter existed about seventy years ago, and was a Frenchman. It is true, this man carried on the search of truffles in a rather expensive way; but he may be said to have established the art, since several persons whom he had employed in it learnt it from him. The truffle-hunters at the other German courts were also all Italians, Piedmontese, Savoyards, or Frenchmen, who made truffle-searching with dogs the order of the day.

§ 12. *The requisite Tools for Truffle-Hunting.* — The truffle-hunter does not require for his chase an equipment so carefully made, and such a numerous collection of instruments, as the huntsman. His tools are simple, and few in number. A hunting-bag is indispensably necessary for him, to keep such truffles in as he may find, and for provision for himself and his dogs; to which, as is said below, a morsel, by way of encouragement, must frequently be given. A sharp, strong, not costly cutlass, is essentially useful, to cut the shrubs and small roots which may obstruct his digging out the truffles. The most necessary to him is a simple instrument, his principal tool, with which the truffles are dug out. This consists of a heart-shaped shovel, of from 3 to 4 inches in length, and $3\frac{1}{2}$ inches in breadth; and of a hoe horizontally bent, of the same size, and also heart-shaped. These two pieces must, by means of two hoops, be both fastened upon one wooden shaft, of about 2 ft. long; the hoe to the upper, and the shovel to the under, part of it. In using this instrument, the earth must be

carefully scraped away with the hoe till the truffle is visible: the instrument is then turned, and the shovel is thrust a few inches deep into the earth near the truffle, which must be raised out as with a spade.

Of all other instruments which different truffle-hunters get made after their own ideas, this seems to me the best adapted for the purpose; besides which it requires no great outlay. The truffle-hunter, when he uses in his search more than one dog, must be furnished with a pair of dog-couples, to couple his dogs with when he goes out, to prevent their wearying themselves with running about before they arrive at the place where they are to search.

§ 13. *Choice and training of Truffle Dogs.* — Truffles are perceptible to animals with a delicate sense of smelling, chiefly by the smell which they diffuse when ripe. The dog, as is well known, is at the head of domestic animals with an acute smell; and there is no doubt that dogs of all races, provided they are somewhat docile, may be used in truffle-hunting; though water-dogs (pudelhunde) are preferred for this purpose, and next to them are spaniels and setting dogs. The last, incontestably, would do quite as well for this search as poodles or water-dogs, if their instinct did not lead them away from the search of truffles, to follow the track and scent of game. Pudel, or as we spell it in English, poodle, is a German word, and is used to designate that race of dogs which formerly used to be called water-dogs. Poodles seldomer pursue such track of game; and even if they start it, they appear frightened, and keep closer to their work, from which property they are peculiarly fit for truffle dogs. Dogs are taken indifferently of the pure poodle breed; no matter whether those from which they are bred have been truffle-finders or not. The colour, upon which some lay a stress, is of no consequence. The name which is given to the young truffle dog is of still less importance; and it is extremely ridiculous that some insist upon the truffle dog being named Putta, in the Italian language.

A good truffle dog must be, 1. Very tractable, or be at a call; 2. He must search diligently and indefatigably; 3. When he scents a ripe truffle, he must hunt for it; 4. When he has completely discovered it, he must show the place where it is, by scratching with his fore feet; and, 5. When he has got it completely out, he must take it to his master without breaking into or devouring it. A dog that has these qualities may be called quite steady, and is trained in the following manner: —

The first training is begun very early. When the dog is nine weeks or a quarter of a year old, he is taught to come at a call. You must whistle to him, or call to him, saying, "Here;" and praise him when he comes immediately, or punish him, though

gently, when he is inattentive either to the whistle or the call. This must be daily practised and repeated, till he comprehends, and is obedient to, his master's voice or signal. If very stubborn, he must, like a setting dog, be led by a cord, and, upon a whistle or call, be so long pulled in, till he is at last obedient of himself. Then a beginning is made with fetching and carrying, which is the thorough base of a good truffle dog. This is frequently learnt in play by the young poodle, with which force is not nearly so necessary as with the young setting dog, the latter being often obstinate. To teach the dog to fetch and carry, a light piece of wood, or a wisp of straw made up for the purpose, is thrown before him. If he fetches it, he is praised and rewarded with a morsel of bread, &c.; if he does not fetch it, he must be instructed to do it. The piece of wood is placed in his mouth; let him carry it a few steps, and caress him at the same time. The docile poodle soon comprehends what is required of him. If he fetches the wood, potatoes, apples, pears, bulbous roots, and even truffles, are then thrown before him. These objects he fetches just as willingly as the piece of wood. Care, however, should be taken that dead animals be not thrown to him; as by this his love of the chase might easily be awakened. Whenever he fetches a bulbous root, &c., he must be rewarded with a small piece of white or brown bread, and at the same time he must have a truffle to taste. Although this is the cause when he seeks for truffles that he sometimes breaks into them, yet it is essentially advantageous; because by this means he becomes perfectly acquainted with the object which he is hunting for, like a hound that is permitted to eat game. If at that time of the year no truffles are to be had, let a little old cheese, which has nearly the same effect, be given to the dog. But let both be given to him, not only at the very time of his training, but as a dessert at his usual time of feeding, during the whole time of his instruction.

If the dog fetches every thing without distinction, as metal, gold, beans, &c., and is no longer stubborn, the elementary instruction, or chamber-training, is finished, and the training in the field is now proceeded to. This is begun by the dog's "seeking what is lost, or fetching it." This is first done with wood, with fruit, and with truffles, which are so hidden somewhere on the surface that he may easily find them. The instructor may also now begin to form artificial truffles, when no natural ones are to be had. They are prepared from strong-smelling cheese and fresh bread, which are mixed and formed into the shape of a truffle, to which is added a little of what is called truffle oil; that is, olive oil in which truffles have been boiled. If the dog does his duty, and easily finds the objects he has been accustomed to seek, the natural or artificial

truffle is lightly covered with earth, and the dog is told to "seek what is lost." If he do not find it, he is led to the place, and attempts are then made to induce him to scent and grub out what is hidden. The dog must then be rewarded in the way that has been already so often mentioned.

The dog is assiduously practised in this "seeking what is lost;" the truffle is put deeper into the earth, and the dog is now first taken into actual truffle districts. The proceeding there is to be the same as before. Never omit to encourage him when he finds, and points out the place by scratching. By degrees he is accustomed to a continued regular search, like a setting dog; and he is admonished by the thrilling whistle with the mouth, by the expression, "Seek further," or "Go seek," or "Forward." When the dog scents a ripe truffle, and draws to, or in any way approaches it, as hounds do when they scent any thing, his instructor says, "That's right," "Gently," &c., to make him more careful and diligent till he points it out. Here endeavours are made, by further speaking to him, either to prevent his injuring, digging out, and eating the truffle; or else, by the word "Fetch," to make him bring it to his master when he has completely dug it out, which is easily done when it lies near the surface.

When a dog begins to break into the truffles, and to eat them, or when he refuses to give them up, endeavours must be made to break him of this by gentle punishment, and by holding out bread to him. He must likewise be chid for digging after mice, or hunting after birds and hares, to which poodles are inclined.

By a little practice, the dog soon acquires a certain degree of steadiness; and, after these two courses of instruction, is immediately fit to be used in truffle-searching, of which a short outline will now be added. It must still, however, be observed, that the dogs must have good and nourishing food, chiefly of vegetables. They must not run at large too much, but be confined a good deal to the kennel; and, to keep them in practice, they must be led out to seek truffles the whole year through, although no great quantity can be expected to be met with.

§ 14. *Truffle-Hunting, or Search, with Dogs.* — When the truffle-hunter goes out upon search, he must beforehand be able to form an opinion in what places, according to the districts, truffles are to be found; he must be acquainted with the localities. When he goes out upon search, he must either not feed his dogs at all, or very sparingly, that they may be diligent in seeking. This precept is also observed in the chase of every kind of game, and with every species of hound. He must, lastly, be furnished with bread for his dogs, and with the necessary implements. He can seldom in his search superintend

more than two dogs at a time; and with these, in districts that are rich in truffles, he will have his hands full, and not be able to drive his work quick enough forward. In searching, he proceeds in the same way that has been already mentioned in the training. He encourages his dogs by whistling, and mildly speaking to them. He redoubles the last when the dog finds a truffle, and points it out. In this case, he lastly calls him, and immediately gives him a suitable piece of bread. By often giving them bread (which, with respect to dogs that are used in the chase of animals, is neither so necessary, nor so carefully observed), truffle dogs are prevented from eating the sound truffles. If the truffle is not yet visible, it is scratched out and raised with the instrument described in section 12., in the manner there directed. When a truffle is taken out and examined by its smell, it is advisable to search the place further; to scratch away the soil with the hoe part of the instrument, or to dig it up: there are often found in it more truffles, some ripe, and some unripe, as is mentioned in section 5. These the truffle-hunter takes along with him also; for a few unripe or scentless truffles make, in a large quantity, no great difference, and do no harm. It is besides advisable, in such a place, to look carefully about, especially when it is perceived to be a good, fertile, and moist vegetable soil; as then, even with the naked eye, fine truffles are often discovered only half-hidden in the earth, though they have not the ripe smell that is peculiar to truffles, and have, consequently, not been earlier found by the dog. He that chooses to have no truffles but ripe ones, may mark those which he has discovered by the eye, and in a fortnight or three weeks afterwards may seek them out, when they will be ripe, and may be had, if no animals have previously grubbed them up.

The search is proceeded in in the manner directed; but since the truffle dog does not so easily, and from such a distance, scent the truffle which is concealed in the earth, and diffuses an earthy smell around, as a hound scents game in a good wind, a person must go much more accurately to work in searching a district that produces truffles, that in seeking for game, and not be impatient at going through a place twice, and even three times, and at remaining a long time upon a small spot. The trouble is often richly rewarded, by the frequent finding of the dogs. Although truffles ripen and may be sought for the whole year, yet the time preferably made choice of is from July to November, when the frosts set in, in which time the greatest number of truffles ripen. The months which yield the most are September and October; nevertheless, good truffles are found after the frost has commenced, if it be not too severe.

It frequently happens that the indication of the dog is deceptive, and that nothing is found at the place pointed out. In such

place a truffle has generally been taken out, the scent of which was perceived by the dog.

§ 15. *The Truffle Search with Swine, and the Manner of training them.* — In the 7th section it has been already mentioned that wild and domestic swine are fond of truffles, and seek them assiduously. It has, moreover, been more than once remarked, that animals with a delicate sense of smelling easily find ripe truffles. The domestic swine belongs likewise to this class of animals; and upon the two qualities which have been mentioned is founded their use in truffle-searching, which has already long prevailed in the south of Europe, in Spain, in the south of France, and in some districts of Italy, but which in those countries has in a great measure been supplanted by the more convenient use of dogs. I once saw a French emigrant, many years ago, practise truffle-searching with swine; but this, as he assured me, was more for want of a poodle than from any other cause. Undoubtedly the search with dogs has the advantage of that with swine. The dog is more intelligent, more active, and may be used a greater number of years. All these qualities are wanting in the swine. I therefore here give the outline of the training and use of swine in truffle-searching, rather historically, and to make this work more complete, than because I recommend its practice.

As soon as the pigs are weaned, a lively one is made choice of, usually a female, and is separated from the rest. It is more habituated to human society. Endeavours are made to make it obey the call and whistle, and follow its master like a dog, either when it is at large, or fastened by the hind leg. This it does without much trouble, when it is fed by a person's own hand, and is allured by food from one place to another; and when it is sometimes caressed like a dog. There is a very interesting instance of the taming of a young boar that was caught wild, which went a hunting with the hounds. It is to be met with in the delightful *Forest Journal* of Hartig, first year, 1806, p. 545. When four months old, the young pig may, in a proper place, be accustomed to the search. Either real or artificial truffles, or fruits that swine are fond of, such as apples and pears, or potatoes, &c., which have been smeared with truffle oil, are then hidden, and the pig is allowed to grub them up. He finds them without much difficulty. They are taken from him, and his usual food is given to him: a few acorns, chestnuts, fruit, and such like are the best; and for this he, in general, willingly exchanges what he has found. When in his fifth or sixth month, the swine may be first used in the actual search. He is led whilst fasting, or very sparingly fed, into the truffle district, and closely followed always by a person on foot. If he begins to turn his nose to the wind, to smell, and to grub up, you can

either search the place and take away the truffle before he has brought it to the day, or let him root it out himself, and take it from him quickly, by way of exchange, as has been mentioned. But swine often devour the truffles so greedily and so quickly after they have rooted them out, that you can seldom or never take them from them. In this case, in France, their mouths are bound either by a metal ring, or a leathern muzzle, which is strapped over the snout, and fastened behind the ears. Some truffle-hunters put this also in practice with dogs that are spoiled; but it is one of those extremes to which a keen hunter is not easily led, and he generally prefers parting with his dog.

The search for truffles is often tedious and wearisome with swine, which not only root after truffles, but after other articles of food, as roots, insects, larvæ, worms, &c. Expectation is often disappointed, and we cannot always be sure of what is found, as with dogs, when they hunt for and, by scratching, point out the presence of the truffle. Besides this, a swine can be used for the search only a year, or, at most, two summers and autumns. In the third year they become too large, too unruly, and in a condition in which they must be made use of with a view to economy; that is, must be killed. Proper truffle-hunters, therefore, very seldom seek them with swine, but leave this to the peasants; who, in the South of France, and some districts of Italy, pursue the practice. This mode of search is said to be there carried on chiefly by women.

§ 16. *Conclusion.* — Much still remains to be investigated with respect to the nature of truffles, especially as to their origin and increase. Foresters endowed with a spirit of enquiry, and some botanical, and particularly physiological, knowledge, might still make many interesting discoveries with respect to these distinguished productions of nature, if in their sylvan excursions they would pay a closer attention them. I will myself, at every opportunity, which offers, endeavour to advance in my enquiries and observations, and, when I find the latter sufficiently interesting, communicate them in some periodical paper. I shall particularly endeavour, along with a practised chemist, to make and publish a chemical analysis of truffles; since the old one, which was communicated, now exactly 100 years ago, by Geoffroy, whom I have so often mentioned, and according to which truffles are said to contain sulphur and volatile alkali, now that chemistry has made such great progress, is no longer satisfactory. If this slight sketch, which was made for the purpose, gives some instruction to such of my brother foresters as are not experienced in the art, and only half-satisfies the connoisseur, I shall not look upon my attempt as entirely unsuccessful.

ART. III. *A Treatise on the Cultivation of Truffles.* By Alexander von Bornholz. Translated from the German by FRANCIS MACSALL, Esq., of Eppleton, Durham.

THE treatise in question has the following title:—*Der Trüffelbau, oder Anweisung die schwarzen und weissen Trüffeln in Waldungen, Lustgebuschen, und Gärten, durch Kunst zu ziehen, und grosse Anlagen dazu zu machen.* Von Alexander von Bornholz. Quedlinburg und Leipzig, 1825. Bei Gottfried Basse. Its author nowhere states that he has actually cultivated truffles, it is however to be presumed, from what he says, that he has; and I was moreover informed by Count Salm of Vienna, that a person in Hungary had, by cultivating them as recommended by M. Bornholz, "made a good thing of it." This was the expression actually used, the conversation being partly carried on in the English language. I was first informed by the count of the existence of this treatise, which, after some search, and with some difficulty, I procured at Vienna. There, however, the treatise was little known. Such was also the case with the treatise on truffle-hunting by V. F. Fischer [Art. I. p. 385.], which the bookseller of whom I got M. Bornholz's treatise remembered he had, but being ignorant of the author's name he could not for some time find it.

Truffles are found in England, if my information be correct, in Sussex, at or near Goodwood, a seat of the Duke of Richmond; and in Northwood, a wood of about a thousand acres belonging to Lady Newburg, and situate near the parishes of Slindon and Irtham; also in Kent, at Broome, the seat of Sir Henry Oxenden. In the county of Durham, they are met with, if I mistake not, in Castle-Eden dean, and are to be found in many other parts of England. Truffles grown in England may be bought, both fresh and dried in Covent Garden Market in London, where the fresh ones have this year (1833) been sold at the rate of 10*s.* [this year, 1837, they were 14*s.*, see Market List, p. 384.] per pound.—*F. M.*

THE Cultivation of Truffles, or Instructions for artificially raising and making large Plantations of Black and White Truffles, in Woods, Shrubberies, and Gardens. By Alexander von Bornholz.

Introduction. — Ripe truffles, freshly taken up, are more different from those that are dried, dipped in oil, wrapped in waxed paper, or preserved in glasses, which the Italians and French sell us for German gold, than a beautiful Borsdorfer apple is from slices of a dried apple. Nevertheless the best in the woods of Germany are not dug up, and not unfrequently, either from ignorance or the avarice of those that deal in them, bad and useless sorts (such as the swine-truffle) are mixed along

with the edible ones. Every admirer of truffles (and who is not such, when he has once tasted perfectly ripe ones?) will rejoice to learn that they may be, and have been, raised upon situations adapted to them, as well as mushrooms; and that the planting of them is neither expensive nor troublesome. Every one who has a proper situation for them on his estate, will most willingly make plantations of them according to the directions here given. At a small expense, he will augment at once the pleasures of his table, and also his income; for in a few years the crops will have so increased, as to enable the planter to offer them for sale. He will then not only receive back his first expenses, but also a considerable surplus. There is no reason to apprehend that truffles will, by means of numerous plantations of them, sink in value (as almost all productions of landed property have done), so as to be hardly worth any thing; since most of those who buy truffles dwell in large towns, and are so engaged as to have no time to raise them. On the contrary, by the extension of the cultivation of truffles, the money now paid for them to foreigners would be spared to our country, at which every sincere lover of it would rejoice; and the consumption of the article would probably be very greatly increased. We may confidently expect an active participation in extending the cultivation of truffles, from the exertions of our horticultural societies. By this extension, not only will the profit of land be increased, but also the pleasures of society, as these are more promoted by delicacies for the table than by the rarest flowers.

Amongst the various species of fungi which man has applied to his nutriment, the truffle is of the greatest value. Morels are much inferior to it. Even the highly esteemed cultivated mushroom is not to be compared with it, still less are other edible fungi. With connoisseurs it is in higher estimation than the pine-apple amongst fruits, and the oyster amongst bivalves. The high estimation in which truffles are held, and their dearness, are not however occasioned by their peculiarly fine aromatic flavour alone, but by the difficulties which are connected with seeking them in woody situations. Dogs must be broken in, or swine must be accustomed to discover and turn them up; and only a few people understand the art of accustoming these animals to resist their natural voracity, and to leave to man the food they have discovered.

On this account, the truffle, in Germany, appears only upon the tables of the wealthy, and of those who have large landed possessions; in which they seldom cause truffles to be sought for, but buy them at a high price from foreigners. Truffles grow in several woods; but people avoid the trouble of either digging them up, or of training dogs and swine, to enable them with facility to take them out of the earth. German truffles are left

as food for worms and for swine, and people are satisfied with such as the industrious French or Italians have sought out in their own country, and have sent abroad as merchandise.

As truffles are produced in woods, the proprietors of woods are the only persons that are entitled to cause them to be dug out. Only a few proprietors of extensive landed property or of large gardens possess woods, or, even if they have such, the soil of the wood does not possess such a mixture of earths as this species of fungus requires for its production and growth. It cannot therefore be produced, and the proprietor of landed property is compelled to purchase fresh truffles elsewhere; or, since they grow only in few places, and are generally sold to favourites, must accommodate himself with such bad ones as are offered for sale.

The relish of the truffle arises from very fine matter, which is so volatile that it rises through the strata of earth, and betrays at the surface the deeply hidden fungus to certain animals endowed with an acute sense of smelling. In order to preserve this volatile matter from escaping, those truffles which are intended for sale by the French and Italians are preserved or marinated, enclosed in glasses from which the air is excluded, or dipped in oil, and then wrapped up in waxed paper. Notwithstanding all these contrivances, this valuable matter cannot be completely retained; and the bought truffles are as much inferior to fresh ones that have been lately dug up, as asparagus pickled or dried for winter consumption, or the beans and peas preserved in the same way, are to the same fresh vegetables cooked in spring and summer.

It must be very desirable to every proprietor of lands and gardens to become acquainted with a practice by which he can raise truffles himself. By such means the pleasures of the table will be enhanced, or, if he should prefer it, the profit of his landed property will be increased by the sale of fresh truffles. It is long ago that the great advantages which such cultivation would produce have been perceived; and in the last century many attempts were made, although fruitlessly, to transplant and cultivate truffles. How, indeed, could it have been possible to transplant, with the requisite skill, a fungus, the nature of which was totally unknown, and the circumstances under which it was possible for it to arise and thrive were not attended to?

Whether truffles, as fungi in general, should be ranked amongst plants or animals, was a disputed point: but now the conviction is, that they belong exclusively to neither, but stand in the midst between the two kingdoms, and incline equally to both. They are not propagated by seeds, as was formerly believed; but are formed in the upper strata of the earth, as hydatids in animal bodies, or the infusoria, visible only to the eye

that is assisted by a microscope, in water that contains organic matter. Since no man either has seen, or can see, the seed of fungi, it was assumed to be so small as not to be visible even by the assistance of the best microscope. This seed, then, must have filled the air, and laid hold of every small place which made the germination and increase of the young plant possible. Such a supposition was admissible in the case of those fungi that grew in the open air, but impossible with regard to those which were found in the earth. How, in this case, should the fine seed escape out of its closed grave, drawn forth by the attracting powers of the soil, and be carried to distant places to produce in them new truffles?

The error, however, was the occasion of trials, which, being founded upon a wrong supposition, could not be attended by a successful result. In order to cultivate mushrooms and truffles, old fungi were dug up, and planted in the places destined for them, to shed their seed and be the origin of a new race of fungi. Peculiar care was bestowed upon truffles: they were cautiously dug up from their ancient place of growth, and taken to the new soil, which, however, was neither properly prepared, nor the mixture of earths given to it which was requisite to the prosperity of the fungus. It then appeared to be inconceivable, why, with all this attention, the experiment failed; and the old truffle soon died, without leaving any successors. It was expected to scatter seed in the soil, but had disappeared without leaving a trace behind it. Was the proceeding here observed at all different from cutting a hydatid out of one animal, and inserting it into another? or causing an intestinal worm to be swallowed, and then imagining that the minute animal should be increased in its new situation?

The hydatid and intestinal worm are not produced by transfer, but by such changes taking place in the mixture of the component parts of the animal bodies in which we find them, as to occasion that species of worms to be produced and thrive. We sometimes find newly born, and even unborn, animals inhabited by worms, which, nevertheless, are not transferable. Other animals, on the contrary, are free from worms to the extreme of old age; for their bodies present not to these worms such a habitation as is requisite to their thriving. Just in the same manner fungi, viz. mushrooms and truffles, which are very obstinate in their choice of situations (habitats), arise and thrive only under favourable circumstances, in a soil suitable to their nature.

Many attempts failed before it was known how to raise mushrooms upon places where they were wanted, and yet this fungus is not near so delicate in its choice of a habitat and mixture of soil as the truffle, whose artificial increase was not successful.

The secret of raising the mushroom upon places that were assigned to it, was only comparatively recently discovered in Italy. Without being able to give any exact account of the grounds upon which the experiments were made, the object in view was attained by means of several experiments. The preparations that were made, and in general the whole procedure, were imitated in France, and succeeded. The raising of truffles would be still easier in Germany; since here the proceeding might be commenced with proper views of the nature of the fungus, and of its manner of originating and formation: its proper treatment could, therefore, be easily pointed out.

There are several kinds of truffles, which must be critically known and distinguished by any one who proposes to lay out a situation for this species of fungus. Without this, the planter would be exposed to the hazard of planting bad and useless kinds, instead of the good and eatable ones. To enable him to avoid this, the following description of the different kinds will be useful to most readers: —

Linnæus and other ancient botanists comprehended all the different species of truffles under the genus Lycopérdon, which is said to be distinguished from the rest of the fungi by having a round body filled with powdery seeds. The lycoperdons have, while alive, a fleshy body, with veins running through it, which, by means of absorbing organs, like roots, either draw their necessary nutriment from the earth, or sit upon plants and rob them of their juices. For example, to the first division belongs the commonly known puffball (Lycopérdon *Bovísta*); and to the last, the grated puffball (Lycopérdon cancellàtum), upon the leaves of the pear tree. When dead, the inside of the body, of most kinds, quickly becomes an extremely fine dust, which, for a considerable time, is included in the dry, more durable, paper-like external skin. Formerly, in this fine dust the seed was looked for; and it was supposed to be carried by the winds into very distant districts. This belief was so strong, that it could not be shaken by all the unsuccessful attempts which were made to raise young fungi by sowing the supposed seed.

Later botanists have separated the family of such lycoperdons as grow within the earth from the two other kinds which grow upon its surface, and have raised them to a separate genus, under the name *T*ùber. The latter differs much more from the former, than the cherry does from the plum, or the bean from the pea. The new genus includes many species, though not all of them; especially those which grow in deeper strata of earth are sufficiently known to be distinctly different. The following are the only ones that are accurately known: —

1. *The true Truffle* (T*ùber gulònum*, T. *gulosòrum*, *Lyco-*

pérdon T*ùber* L. [T*ùber cibàrium* Sibth., *fig.* 116.]). — Of a round form, more or less approaching to that of a sphere, or of an egg, or sometimes kidney-shaped, and somewhat rough with protuberances. The colour of the surface is, when it is young, whitish; but in those that are full grown, it is either blackish, or a deep black. The colour of the inside is whitish, with dark blue and white, grey, reddish, light brown, or dark brown veins, of the thickness of a horse-hair, which are usually variously entangled, and which form a kind of network, or mat. Between the veins are numerous cavities, filled with a great deal of mucilage and small solid grains. These scarcely visible glands were formerly said to be the seeds or germs of the young truffles. The less the inside of the truffle is coloured by dark veins, the more tender and delicious is its flesh. The blackish external rind is hard, and very rough, by means of fine fissures, grains, and protuberances; and forms, with its small facets, which are almost hexagonal, an appearance by which it somewhat resembles the fir-apples of the larch.

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Whilst the truffle is young, its smell resembles that of putrid plants, or of moist vegetable earth. When it first approaches the point of time at which it has attained its full growth, it diffuses an agreeable smell which is peculiar to it, resembling that of musk, but which lasts only a few days; it then becomes stronger, and the nearer the fungus is to its death and its dissolution, which speedily ensues, so much the more unpleasant and urinous is the smell, till at last it is quite disagreeable and putrid. Whilst young, the flesh is watery, and its taste insipid: when fully formed, its firm flesh, which is like the kernel of the almond and the nut, has an extremely aromatic and delicious taste; but as soon as the fungus begins to decay, and worms and putrescence to attack it, its taste is bitter and disagreeable.

Wherever truffles are produced, there they are to be found the whole year through, from the beginning of spring till late in autumn; but in the greatest plenty from towards the end of the month of August to the latter end of October. They thrive extremely, like all fungi, in warm moist autumns, and are then most delicious. After warm continuing showers, they are found nearer the surface of the soil, sometimes so high that they form little hemispherical mounds of earth, in which small clefts are produced by the sun's rays. If the soil is loose, and dry weather succeeds, the earth which was raised up falls down, and the truffle is seen half-uncovered. Nevertheless, these truffles are of small value, as they are generally either dead or worm-eaten.

The favourite habitat of truffles is a somewhat moist light wood-soil, which is defended from the immediate effect of the

burning rays of the sun by large oak trees, standing at a distance from each other, but is not deprived, by thick bushes, of the free access of currents of air. Where, in woods, there are places bare of timber trees, and with but few bushes, or covered with pollarded wood that does not stand thick, they thrive under an oak, beech, whitethorn, and even under a fruit tree, and sometimes attain the weight of from a pound to a pound and a half: this unusual size, however, is only met with in moist warm grounds. Here they lie nearer the surface of the soil. The drier the soil is, the deeper they are produced in it; but are usually so much the smaller: to this the vicinity of springs is the sole exception.

There are some varieties of truffles which differ in the greater or less degree of roughness of their external rind, in a stronger smell, resembling that of garlic, and in a lighter or darker colour. Amongst all truffles, the white variety is of most value, and is preferred to every other. It grows in Upper Italy, chiefly in Piedmont. Its surface is of a yellowish brown, or pale grey-yellow, covered with protuberances resembling warts. The veins in the inside are more delicate than in the black kind, and are of a reddish yellow colour. Between the veins, the flesh of truffles that are fully formed, and their sap-vessels and glands, are of a reddish colour. The smell and taste of the white truffle are much superior to those of the black, and on that account it is more deserving of cultivation. Only the first plantation requires to be circumstantially attended to, as living pieces can seldom be procured, and to plant dead ones in new plantations is useless. Since this white truffle never degenerates to the black, but constantly produces the same, it appears to be not a variety, but a particular species. It is also found in vineyards, meadows, and even in ploughed fields; but the black ones are found only near to forest trees.

2. *Hog-Truffle, Swine-Truffle, Wild Truffle* (*Tùber súillum*). — This truffle, which is generally kidney-shaped, usually reaches the size of a bean, and only under very favourable circumstances that of a small hen's egg. It has a thin, leather-like rind, which is covered with many small round warts, without any flat interstices. By means of these, it is distinguished from the true truffle, which sometimes also assumes the kidney shape. The flesh is juicy, and traversed by coarse veins, which are not very crooked. The smell is disagreeably sour, and is like that of swine's dung, on which account it has received its name. Its taste is unpleasant and insipid. On account of its disagreeable taste and smell, it is not used as food; and none but avaricious truffle-hunters mix it amongst the edible truffles, along with which it is often found. There are, nevertheless, districts in which none but swine-truffles are to be met with. Being hardier

than the real truffles, they can easily give such properties to the soil of woods, that it produces none but swine-truffles. They are usually found in abundance in such tracts of land as are not mellow, but incline to sourness. Young plantations of truffles may easily be spoilt, and all labour and expense be useless, if, through inattention or want of knowledge, this swine-truffle is transferred from its old place of growth into the new. As the real truffle prefers the oak, so the swine-truffle seems to prefer the whitethorn, to all other trees. Under its roots they are formed from twenty to thirty together; on the contrary, the edible truffle seldom occurs so many together: it usually lives singly.

3. *Small Truffle* (*Tùber mínimum*). — This species of truffle lives in much society, and always occurs in great numbers together. It attains only the size of a pea, and is of an irregular form approaching to that of a sphere. Formerly it was thought to be the young progeny of the edible truffle.

4. *The Stag-Truffle* (*the Stag-rut Fungus*, *Tùber cervìnum*). — This is the largest kind. It has a globular form and a loose spongy flesh, which, in the midst of its body has so little coherence, that it forms a dusty core or heart. It is not used by man, but red deer scrape it.

All truffles draw nourishment from the earth; not by means of roots, of which no trace is to be found, but by absorbing vessels which cover their whole superficies, in the form, generally, of small warts. For this reason they can thrive in none but moist situations, which offer them, in sufficient quantity, matter dissolved in water. In proportion as the earth about them dries up, the fungi must wither away. They have indeed, in their interior, vessels which contain water, to enable them for a time to do without external moisture; but, if the drought continues, their internal provision is exhausted, the truffle becomes unhealthy, and must at length perish from thirst.

Notwithstanding the want of moisture is thus injurious to the cultivation of truffles, too great a quantity is equally destructive to them. Acids are generated, mould and numerous other parasitic plants get a footing upon the surface of the tubes, and by degrees obstruct the absorbing vessels, and the body of the truffle is consumed or putrefies; the mould also allures many small worms which establish themselves upon the truffle and live upon its flesh.

Upon the first production of the truffle its size is scarcely perceivable; as it proceeds in its growth, the earth that is around it is pressed together and pushed off. On this account the truffle can prosper in none but a loose soil. If the soil is everywhere equally loose, the truffle assumes a globular form; but this is changed if there is on one side a greater opposition than

on the other; as, for instance, by a root or a stone. Hence the different forms of the tubers may be explained. Where the soil is most moist, whether above or under the truffle, there it will either rise up or sink deeper. The degree of power of attraction of the moisture in the earth, to that in the truffle, necessitates such a change of place. In moist summers, and in wet winters, we find the truffles near the surface, even projecting above it. In dry summers, upon poor dry places in woods, they have often to be dug from a depth of more than half a foot. Here is imposed upon them a greater pressure of superincumbent soil. If the earth is not very light, they cannot be fully developed, and therefore remain small. The largest are, consequently, in general, found not deep under the earth, and in shaded light soil that is somewhat moist; they are not, however, so well tasted as those of middling size; they are also usually injured, and therefore of a bitter taste. The access of their enemies, viz. worms, snails, and quadrupeds, is much facilitated when no deep stratum of earth protects them against these attacks.

As truffles were found in such soils only as contained many putrid parts of vegetables, especially roots and leaves, or twigs of trees; it was in old times the opinion, that these fungi were neither plants nor animals, that they did not arise from germs, but that they had been formed by a globular secretion and attraction of matter found in the earth. According to this supposition, they no further differ from minerals than that in them the materials of the earth unite in forming a new substance; but here, in the case of truffles, the new body is formed by parts of plants in solution. Pliny, the Roman naturalist, was of the same opinion, and adduces, as a proof, the experience of a Roman prætor, Lartius Licinius. This person, a few years before, had eaten truffles in Spain, and had met with something hard in one of them. Upon a closer examination he found a small Roman silver coin, a penny (denarius); which, therefore, being accidentally present in the mechanical accretion of its component parts, was enclosed along with them. [See p. 398.] Taking the fact for granted, it by no means proves the assumed opinion. If the coin were really found in the body of the truffle, and had not in the cooking accidentally found its way in, it had been pressed in by the quick growth of the fungus. Being a hard body, it did not give way to the truffle equally with the loose moist soil, and was included in the substance of the fungus, as nowadays small foreign bodies, such as stone and metals, are met with in wood, and in the inside of more juicy plants. When such are met with, they are supposed to have been accidentally included; because it is known that a tree or plant continually increases in circumference from its youth to its old age. There is no reason in these instances, from the presence of these foreign bodies in

wood, to infer a mechanical accretion of component parts, and there is as little for the inference in the case of the truffle. This, nevertheless, is still believed by individuals, who pretend that all fungi are formed from the putrescence of dead vegetables.

There is, however, some truth in this clumsy representation. As the infusoria are more readily produced, and in greater numbers, in water that contains a solution of organised matter, so fungi are produced where the soil is mixed with such matter as must necessarily be used for their formation. When truffles are to be produced by artificial means, nature must be imitated as closely as possible, and such circumstances introduced as are always met with in the habitats of this fungus.

We meet with truffles, at least in Germany, exclusively in moist woods, as well in mountainous tracts as in plains, but not in thickets, which cannot be penetrated by the rays of the sun, or moved by a draught of air; but in vacant places, which are somewhat shaded by lofty trees, but by very little underwood. Of all species of trees, an oak standing aloof from other trees, with its branches widely extended, collects about it the greatest number of edible truffles. It keeps off the burning rays of the sun, but at the same time permits the free coöperation of the air and of warmth. Under it truffles acquire the most delicious flavour, and sometimes are so large as to be 3 or 4 inches in diameter, and to weigh from a pound to a pound and a half. Truffles are also dug up in woods that are not crowded, under hornbeams (weissbüchen), elms, maples, and other deciduous trees; but less plentifully, not so well flavoured, and less in size. In close pine woods they entirely fail, and are rare in woods of mixed kinds of trees.

Hence vegetable mould from oak leaves and decayed oak appears to contribute to the production and the growth of truffles, as advantageously as the dung of horses and asses does to the production of mushrooms. In this case, a peculiar animal matter produces the effect; in the other, a peculiar vegetable matter: perhaps the tannin, or some other yet undiscovered product of the oak tree. The more of this matter any species of tree contains, with the greater facility are truffles produced in its vicinity, and in greater numbers. He, therefore, who wishes to lay out truffle beds must endeavour to accumulate this matter in the soil where he intends them to be, and to introduce those circumstances under which the production and thriving of this fungus are rendered possible and promoted.

In laying out truffle beds a distinction must be made between wood land and garden land. The former needs not much preparation, and promises a surer profit than garden land, with which must be artificially mixed those species of earth that, in the latter, have for several years been accumulated by nature.

He, therefore, who can take for new truffle beds wood land, especially that which for centuries has produced the above-mentioned trees, spares both time and expense.

But, whether the truffle plantation be made in a wood or a garden, the first requisite is a somewhat moist soil in a low situation. In level ground, such soil is generally found in the vicinity of brooks, rivers, lakes, and meadows. The ground itself, however, must not contain any sharp or sour component parts, but must be mellow and fertile. Least of all are adapted to the purpose situations in the neighbourhood of morasses or turf moors; and especially those low situations the subsoil of which is full of saline or sour matter. This is easily known by the reeds, horsetail (*Equisètum*), coarse kinds of grass, and mosses, which grow upon their surface, and, whether green or dry, are rejected by cattle and sheep, or only eaten by them from excessive hunger.

He who has no such mellow soil, in a depressed situation, upon his property, may most easily form it by art in the neighbourhood of springs, or at the foot of a rising ground; but the first plantation is thereby proportionally rendered more expensive. The ground designed for the cultivation of truffles must, in the first place, be dug out from 4 ft. to 5 ft. deep, and be lined at the bottom, and on the sides, with a stratum of clay or very fat loam of a foot thick, that the spring water which is conducted to it may not strain through, and run off. If the subsoil be loam or clay, the thickness of the stratum of clay to be placed upon it may be diminished; but, if it be a dry sand, it must be more than a foot thick. This artificial depression is then filled with earth artificially prepared, and now the spring, or small brook, is turned upon it. Truffles certainly require a moist soil, but they cannot endure boggy ground or standing water; a ditch must, therefore, be cut to carry away all superfluous water. This ditch is either opened or shut accordingly as a superfluity or want of water renders necessary. But if, in very hot dry summers, the supply of water should itself fail, the truffle beds must be sufficiently moistened with pure river water. This is the expedient to which recourse must be had in dry situations, that neither possess a spring, nor a small brook for watering a plantation of truffles. Since only small beds, and not large fields, are taken for the cultivation of truffles, the greatest care may be taken in the preparatory steps, the expense of which will, however, never be so considerable as to be much felt by the landed proprietor. He, therefore, who has upon his property no such mixture of earths as the growth of truffles requires, must endeavour to obtain it artificially.

We find the most and finest truffles in a light, ferruginous, calcareous soil. Such a one must, therefore, also be given to

the plantations. This is found naturally only in particular situations; for which reason truffles do not grow everywhere. That which is accidentally in the new plantation is looked upon as a welcome present, and those materials only are mixed with it which the raising of truffles indispensably requires. A ferruginous calcareous soil is generally too compact, seldom too loose, and frequently not sufficiently ferruginous. The first fault may be remedied by the addition of ferruginous sand; the second, by a mixture with loam; and the third may be remedied by beating ferruginous sandstone (which is to be had almost every where) to fine sand, and mixing a fourth, at the most a third, part of it, with the natural soil. If iron-stone is not to be had, the want of it must be supplied by iron shavings, iron filings, sparks and other cheap small refuse which falls from iron in manufacturing it: this must be added to the mixture of earths, and made to rust and dissolve by the addition of moisture.

A calcareous or chalky marl forms the groundwork of all artificial mixtures of soils for the cultivation of the truffle. When this is to be had in the neighbourhood, it is mixed with the fourth part of iron sandstone. If this marl be not in the environs, then finely beaten calcareous stone or beaten chalk must supply its place: to this must be added from the fourth to the third part of ferruginous sand, and the whole mixed together as uniformly as possible. With this artificial calcareous marl the truffle-bed (which has been dug out from $2\frac{1}{2}$ ft. to 3 ft. deep) is filled up a foot high, in the place of the natural earth. It is advantageous when the pit, which is dug out for that purpose, before it is filled with the new soil, is lined on the sides and bottom with unburnt calcareous stone. By this means, not only will mice, and several kinds of worms, be prevented from establishing themselves in the new truffle beds, and preparing to destroy the young germs of the truffles, but sudden heavy rains will be prevented from occasioning an injurious mixture of the different kinds of earths. Where calcareous stone is not to be had, sandstone may be used instead of it, especially if it contains iron; or, at all events, either other natural stones, or artificial ones made by the hands of men, may be made use of. The bottom of the pit must not, however, be paved so as to be water-tight, in order that the water may sink into the subsoil, and not cause an injurious bog, instead of the moist depression that is intended.

If, when the pit is dug out, a compact subsoil is met with, for example, a loamy bottom, the paving of the bottom of the pit is superfluous: it would obstruct the binding of the under strata with the new-laid bottom of the truffle plantation. It sometimes happens, that, in digging out the pit, a bed of clay is met with, which is impervious to water. In such a case, it is better to leave the place and choose another, than to spend

money upon the plantation, and, instead of raising truffles, only to make a small bog.

All the above preparations are necessary for wood lands, and for plantations in large gardens and English shrubberies; but the further filling up of the pit is different for each place. In woods, the soil contains much vegetable matter; but that is not enough, especially when an artificial mixture of earths is undertaken. In order to obtain a very nutritious vegetable earth, let pure cow-dung be carried into heaps in the spring, and left to fall into earth in the course of the summer. That is best which is collected as fresh as possible on pastures and commons. That it may not lose its nutritious matter through drought and heat, the heaps must be made in a shady place, be turned from time to time, and, in dry weather, be often moistened with cow's urine, or with soft river water. This watering must not be so abundant as to allow the dung to become lixiviated, in which case its most valuable powers will be communicated to the ground underneath.

In autumn, when the leaves fall from the trees, the dung is for the greatest part converted into earth. The fourth or fifth part of this earth is to be added to the natural wood soil; and of fallen oak leaves, or, if these are not to be had, of fallen hornbeam leaves, as much in bulk as half of the mixture amounts to: the whole must then be carefully mixed together. The pit is to be completely filled with the mixture, which is to be covered with a layer of oak leaves, of from 4 in. to 6 in. thick. A wood soil, with much vegetable earth from oak trees, requires a smaller addition of oak leaves, than a soil that contains less of it. The greatest is required by the mixture of one half or the third part of natural wood earth with the before-mentioned ferruginous calcareous marl. In this case, which often occurs, as many leaves are added as the proportion of the calcareous earth occupies in space; and the pit, when filled, is covered over with a thick layer of leaves.

There is no fear of this cover of leaves being carried away by the storms that prevail in autumn and winter, as the truffle plantations are made in low situations, sheltered by trees, and not exposed to a strong current of air. If, however, this were not to be avoided, the scattering of the leaves may be prevented by some earth taken from the mixture being spread over them, or by small branches of oak being laid upon them, and secured by stones. Such a cover of leaves is of great service to the planting of truffles; since by the moisture of the winter the most efficacious matter is extracted from it, and communicated to the soil beneath. For this reason, a new cover must be laid upon it every autumn. Early in the following spring, the uppermost layer, being exhausted by the air, is to be taken away; but

the under and moister one lightly dug in, or, which is still better, raked flat, lest the tender germs of the truffles should be injured or destroyed; but, when the truffle plantation is first made, the whole cover must be deeply dug down.

Every previous preparation is thus made for the cultivation of truffles. We now come to the mode of causing them to be produced. Since they are neither sown, nor, like animals, propagated by eggs and young ones, the only thing that remains for us to do is, to cause the soil to produce truffles. We know from experience that many forms (viz. crystallisations) are easily produced, when bodies of their own sort, already formed, are introduced into the mass of forming matter. Thus, sugar easily forms in crystals, when crystals of the same sort are hung in a fluid mass saturated with saccharine matter. Fungi are also produced in a similar manner, where living bodies of the same kind, or such as have not long been dead, or even parts of them lately pulled off, meet with a soil adapted to them. Thus, mushrooms thrive well if horse's or ass's dung be mixed with pieces of this fungus. The same takes place with truffles; only here greater circumspection is requisite.

The mushroom raises its head above the dark earth, and lives and thrives in the open air, and in warm sunshine. When taken from its parent soil, neither the operation of the circumambient air, nor the gentle access of the sun's rays, immediately destroys it. As long as its body contains sufficient moisture, it continues to live, and may, without much precaution, be removed from one place to another. If the journey does not last too long, it still retains the degree of vitality necessary to impart to the new soil the property of producing young mushrooms. On this account, good mushroom beds, that are carefully made, seldom fail, and the expectation of a good crop is constantly justified.

Not so the truffle. It cannot bear the immediate access of the air, and still less of the sun's rays, but dies when it is exposed to them, as quickly as a delicate fish when taken out of the water, or an intestinal worm when torn from the animal body which is its habitation. A dead body of a truffle, which, moreover, soon becomes putrid, cannot, even under the most favourable circumstances, induce in the new habitat assigned to it a formation of young fungi of its own species. This is possible only to the living truffle: but its complete vitality is hardly sufficient to give such a direction to the powers subsisting in the strata of earth, as to produce and form new truffles in a soil that had never produced them; but, if this power of production is once awakened, it is easy to retain it for years.

If, therefore, truffles are to be transported from one situation to another, and to be promoted to be the ancestors of their

species, the greatest precautions must be taken, lest they die on the journey, and become useless. This is the greatest difficulty to be encountered in the planting of truffles, and thus the plantation may easily fail. If truffles naturally grow in the vicinity of the new plantation, the experiment may be repeated without much expense; but, when truffles have to be sent a considerable distance, it is very unpleasant to lose both time and money. Truffles, at their full growth, must not be chosen for transplanting: at that time their vital powers are too feeble; they are then too near dying to cause the production of this species in their new situation. They are as little able to bear the violent removal from their ancient situation, and transplantation into a new one, as an old tree (for instance, a fir or an oak) that has arrived at its full growth. Most of the early attempts to remove truffles from one situation to another must have failed, because large, and consequently old worn-out, truffles were chosen for the purpose; and it was expected that they should survive this treatment, contrary to their nature, and combined with their transplantation. Already, during their journey, or even after being planted, they fell a prey to death; and their bodies, soon becoming putrid, were unable to operate efficaciously upon the vicinity assigned them.

Equally injurious is the planting of tender truffle germs, or very small truffles. They also cannot be taken from their parental earth, and abandoned to their new situation, without being exposed to the same hazard of dying as a young hound which is taken from its mother's breast and left to itself, even with heaps of meat and drink about it. How could it be even possible that the tender truffle germ should operate so powerfully upon the new soil, where truffles had never grown, as to collect about the tender plant the matter necessary for the support of the fungus, and to change it to its nutriment?

Let, therefore, truffles of a middle size, and in the full possession of their vital powers, be chosen for transplanting. There is no great difficulty in finding truffles in a place in a wood where many grow. Truffles are generally found in groups; so that many, of all ages, are found near to fully grown ones. If the dog has found the place where such as are fully grown exist (for he can discover none but by the smell which is diffused around them, and the young ones have no smell), we only need carefully search the ground near to find more truffles, both young and fully grown ones. In the general search, the young unripe ones are mostly left unnoticed, but so torn from their situation, that they must soon die.

Nevertheless, these half-grown truffles often greatly resemble the other before-mentioned truffles, that are not edible; and an experienced eye is necessary to distinguish them from such use-

less kinds as are frequently met with near them, especially as, in doubtful cases, the smell decides nothing; for the edible truffle first receives, when it is become ripe, that smell which designates it, so as not to be mistaken. In order that no useless truffles may be brought into the plantation (viz. the swine truffles), notwithstanding they would come quickly forward, let those be thrown away respecting which it is uncertain whether they are of the edible kind or not. If the place be known where half-grown truffles are, let them be taken up on a showery day, or at least a cloudy one, in such a manner as that they may remain completely enveloped in a ball of earth, and be as little as possible exposed to the access of the air. If the earth is very loose, so as not to hold firmly together; or if, through previous drought, it had lost its natural vicidity, which it has not fully recovered again through the last rain; the place where the truffles are must have a great deal of water poured over it a few hours before they are taken up. The fungi will then be easily taken up, together with the earth about them, and put into a wooden case, which must be filled with moist wood earth, from the place of growth of the truffles, and closely fastened down. Truffles may thus be sent many miles, without any danger of their perishing. Only upon long journeys, which last several days or weeks, the case must often be opened, for an hour at a time, and the earth from time to time be moistened with fresh river-water, that the truffles may not become mouldy and putrid. This practice is necessary with respect to the white truffle, which has hitherto been considered to grow only in Upper Italy, but can, nevertheless, be transplanted, as well as the black sort.

When the truffles have reached their appointed destination, the case must be immediately opened in an airy but shady place, and the earth moistened, if necessary; after which, they must be planted as soon as possible in the situation intended for them. It is not advisable to distribute the truffles over the whole of the bed; it is better to plant them upon a small part of it. As, upon a newly made bed, the matter in the earth has not taken the direction necessary to the production of this species of fungus, it is easily conceivable that a single truffle cannot act sufficiently to produce this direction, but that the united power of several is requisite. In the earlier attempts, it was, indeed, expected from a single fungus, or even from pieces cut off, that they should exert this power upon the new soil; but the expectation was continually frustrated. According to the nature of the soil, whether more or less moist, the truffles are set from 2 in. to 4 in., or, at the most, 6 in., deep. The soil in which they were enveloped in their journey is left upon them, and the utmost efforts are made to prevent their being exposed

to the access of the air, or even to that of the sun's rays. On this account, the planting of them must take place only in the evening, when the sun is gone down, or in very cloudy weather. Holes of the depth required must be made beforehand, the bottoms of which must be strewed with soil out of the case; then each truffle must be carefully lifted up, with the soil that is about it, planted, and the soil that still remains in the case be distributed in the holes. If the holes are not filled with this, they must be filled with the soil of their new situation, which must be moistened with repeated sprinklings of water. The new plantation must then be amply covered with twigs cut from the oak or hornbeam; and the soil must be planted with young trees of these kinds, not crowded, but at such a distance as to give sufficient shade, so as to prevent the land from being dried up.

The best time for transplanting truffles is towards the middle of spring and in the beginning of autumn, about which latter season the greatest number of half-grown truffles is to be found. About this time, the land is usually moist enough of itself, so that it is not necessary to water it to prevent its being dried up. But, in case it should be dry from great drought, it must assuredly be moistened in this manner; in doing which, the water, nevertheless, must not be poured on in streams, as the germinating brood would thereby be easily choked, or entirely destroyed. It has already been observed, that, in the succeeding autumn, the new plantation should be covered with a layer of oak leaves.

The plantation thus remains undisturbed till the next autumn, only that it is to be freed from large plants that shade it too much, and exhaust all the strength of the soil; but small fine grasses must be suffered to remain, as they give the ground beneficial shade, and prevent too great exhalation. In general, at least in the first years, let endeavours be made to imitate the wood soil as much as possible, in order to obtain the sooner a rich return of truffles.

In the first year, the truffles will be little increased. These fungi have, as yet, too little strength to act powerfully upon the environs, and to compel them to bring forth a large number of tubers. If the plantations have been made in the spring, there will be found in the next autumn some few young truffles, about the size of a nut, with a yellowish outer rind, and of a spongy consistence; an indication that they must remain a longer time to attain their ripeness, and, along with it, their firm consistence and dark colour. In the mean time, these young truffles are the most certain indication that the plantation has succeeded, and that a well-furnished truffle bed will be obtained in the sequel. It is very advisable, in a large plantation, to renew the

plantation in the succeeding year; and, for this reason, at the first planning, to divide the intended bed into two equal parts; and, in two consecutive years, to plant these fungi more towards the middle than towards the ends. If in one year the planting were to fail, the whole bed is not therefore quite uselessly prepared, but is at least duly arranged on one side, by which means it will be easy to furnish the second half in the same way.

Hitherto, the question has been only respecting wood soil. As truffles are produced in this, so also they may be produced in artificial woods, and in English shrubberies. These have also commonly moist low situations, and oak trees also grow in them; but places free from trees, and the deep stratum of fruitful wood soil which has arisen from decayed leaves, are wanting in them. From the continual clearing of the plantations, the leaves that fall in autumn are removed, and cannot be converted into that fertile soil above mentioned. Here, therefore, we must have recourse to art.

In such English plantations, a somewhat moist place must be made choice of, in the vicinity, if possible, of a large oak, hornbeam, Spanish chestnut, or other deciduous tree with spreading boughs, which must be freed from the other trees and lofty shrubs. In such plantations, open grass-plots in the neighbourhood of a lofty tree are the best calculated for the purpose. The tree, however, must not be one whose large leaves prevent every ray of the sun and current of air from penetrating, and which form a connected roof, as the different kinds of maples, horse-chestnuts, planes, and other trees do. A tall tree with small leaves must be on the south side of the place destined for a plantation of truffles, to screen it from the burning rays of the southern sun. In a large plantation, a single tree is insufficient, and more are requisite towards the south side; which, however, must stand so far apart as scarce to touch each other with the extremities of their boughs. The natural soil which is found upon this place must be dug out the depth before mentioned, and carried away, as it has too little resemblance to that of ancient woods to be used in the mixture of new soil for the truffles. If good wood earth of oaks can be had in the vicinity, the filling of the pit is not at all different from that of lofty woods previously directed; but very often there are no woods in the neighbourhood, or, at least, no oak woods; and, in that case, soil produced from dung must be mixed with very rich vegetable mould. This is found under groups of trees that have stood a long time, upon places that have been long planted with poplars, willows, or fruit trees, or even upon hills; but not in wet and marshy meadows and pastures.

It often happens that this natural soil is too loose or too com-

pact. In the first case, it contains too much sand, and must be mixed with clay or loam; but a too compact soil has in its composition too little sand, and requires an addition of loam or meagre clay. If marl is to be met with in the neighbourhood, especially calcareous marl, it much improves the mixture; but, if there is none at all in the vicinity, its place must be supplied by calcareous stone or pieces of chalk reduced to powder. All these species of soil must, at the same time that the earth from dung is prepared, be brought together in a heap, to which must be added as much of the parts of plants, viz. the refuse of the vegetables used in the kitchen, leaves, sawdust of oak or other deciduous trees (but not of pines), or wood earth from falls of wood, as the different soils occupy in space. Such a heap of soil must be turned over every week, and moistened in dry weather; and, if not in the shade, must be protected by a high wall from being suddenly dried by the rays of the sun. It is advisable, every time that it is turned over, to cover it with young oak leaves, and to mix them well with it the next time it is turned over. For want of the leaves of this species of tree, those of other trees (for instance, hornbeams, beeches, elms, hazels, and others) may be taken. The heap having been assiduously and carefully wrought over, the earth, in the course of the summer, will have become very rich in vegetable soil, and in the autumn may be applied to the making of the truffle bed. The mode of making it differs from that which has already been described for soil in lofty woods, in nothing, except that, instead of the wood earth, which is there made use of, this artificial earth is taken.

If all the precepts which have been given have been observed in planting the truffles, the proprietor of artificial groups of trees may enjoy the pleasure of raising fresh tubers, as well as the proprietor of wood soil. It is advisable not to make the first plantation too large, in order at first to have merely a nursery from which truffles may be taken at any time. When this is once upon an estate, larger plantations may be made, which are not restricted to the pleasures of the table, but also increase the income.

Plantations of truffles in large gardens are combined with more circumstances and greater difficulties. Here is a want of wood soil, oaks, and hornbeams, which must be supplied or newplanted. It would be too tedious a process to plant an oak in a garden, and wait for its spreading so far as to afford the shade necessary to a plantation of truffles. An old pear tree, a high-trained apple tree, or several plum and cherry trees, will answer the purpose. In the south of Germany, sweet chestnut and almond trees attain such a height and spread of boughs, as to supply the place of the oak, and are preferable to the before-

mentioned fruit trees. Even in Italy, the delicate white truffle is reared under chestnut trees.

In most cases, oak leaves, or, at least, the leaves of the hornbeam, are to be had in the neighbourhood, or, at least, at the distance of a few miles. If, however, they are not, which would certainly be a very extraordinary case, a small plantation of young oaks and hornbeams, that are not too weak, must be made a few years before, in a corner of the garden, that the necessary foliage may be obtained from them; or nurseries of both species of tree be raised from seed, that there may be a previous supply of young trees for planting the truffle bed. This, in most cases, will not be necessary, as the young trees may be obtained in the environs. The preparation of the soil for plantations of truffles in large gardens is, when a sufficiency of oak leaves can be had, not different from similar plantations in pleasure grounds, only the earth is more abundantly mixed with oak leaves. When all the previous preparations have been duly made, the truffles are to be planted in the same way that they are in the tall timber woods; and the new plantation may be somewhat thicker planted with young oaks and hornbeams, so as that they may be the most numerous, viz. in the proportion of two thirds or three fourths. This truffle bed must also, every autumn, be covered with a layer of oak leaves about a foot thick, that the earth may by degrees impart to the plantations a large quantity of the matter of the oak tree. For the same reason, it is very advantageous, if, instead of wood earth, pounded oak bark, or spent bark, that has already been used by the tanners, be made use of; nevertheless, the first is more efficacious, two thirds or three fourths of it having more efficacy than when the whole is of spent bark. But a heap of soil consisting of a mixture of the two kinds of bark requires a longer time than the usual wood earth for complete decomposition, and for becoming a useful earth. It is necessary, therefore, that it should be prepared, not in the spring, but in the autumn preceding, thereby to give it more time to moulder.

The truffle beds made in gardens require constant attention, lest they should be overshadowed and exhausted by high-growing plants. All such plants must therefore be early removed; but the kinds of grass that do not grow too thick may be spared. The truffle plantation must occupy the lowest situation in the garden, that it may not suffer from drought; but, as soon as the ground becomes somewhat dry, it requires to be moistened by a moderate watering. Man, as in all plantations in gardens, fields, and woods, has to contend with many sorts of animals, which force their way into his possessions, and contend for the property which he has assumed. Truffles are also sought for and consumed by many animals; and they are the more easily detected

by these creatures, as they betray their place of growth by the smell which they diffuse around them.

In a lofty wood, inhabited by wild swine, it is not advisable to make a plantation of truffles: the swine would easily discover and destroy them, especially as they are fond of low situations. Red deer and roes, which scrape out and eat them, are less dangerous. Where, therefore, many red deer are in a forest, the new plantation must be secured from their attacks by a high hedge. This also keeps off the fox, which attacks them in the same manner; so also does the badger, though this animal is become too rare, in many parts of Germany, to do much damage; and, if one should be desirous of breaking into the truffle plantation, it would be discovered and become the welcome prey of the gamekeeper. More dangerous than these are the squirrels, which are very dexterous in scraping up the tubers and eating them: all the squirrels which are found in the vicinity of the new truffle plantations, must be shot. Mice also seek truffles that are ripe, at which time they betray themselves by their smell. If the plantation be surrounded by a hedge, the mice may be poisoned, which in one that is not hedged about cannot be done, lest the game should be destroyed. Mice live in woods generally only in society; and, by a little attention, may, in separate places, be easily dug out, caught, and extirpated.

The security of truffles is combined with the greater difficulties in pleasure-grounds, which usually adjoin the open fields, from which they are visited by field mice. Here, catching and poisoning them is a security only when, at the same time, the whole of the environs can be freed from these voracious animals. Owls and crows are the greatest enemies of mice. If these birds, especially the first, can be habituated to dwell in the neighbourhood of truffle plantations (which, through complete protection, it is easy to effect), mice will not be able to do any great mischief, at least not greater than in every other garden and field plantation. Snails, both the red and the black wood snails, are only in wet weather injurious to plantations in which the truffles lie too shallow, or rise quite above the surface. Worms do much more damage, especially in such truffle plantations as are made in gardens or pleasure-grounds. The drawing here of worms from the environs cannot be avoided, as, from the cover of leaves, they lie warm in winter, and, from the quiet which the truffle beds enjoy, are not disturbed in summer. The larvæ of many species of beetle (viz. of the *M*elolóntha *D*erméstes pinipérda, *M.* hortícola, *M.* solstitiàlis, A′pate capucìna), the maggots of several flies, scolopendræ, millepedes, &c., penetrate the truffles in all directions, give them a bitter taste, and often are the cause of their death. That new plantations sometimes fail is not to be attributed either to a process that is

defective, or to the impossibility of completing a good one. These worms may be the cause that all labour and expense were applied in vain. That plantations which are new are the most exposed to these enemies is easy to be explained. The earth is not yet sufficiently penetrated by the tannin of the oak, which is offensive to these kinds of insects, and drives them away. They are usually brought here by the dung-earth, especially when it contains parts that are not entirely converted into soil. For this reason, the frequent turning of the heap of earth is necessary. If, when this takes place, it be observed that many worms have established themselves in it, only let there be mixed in it some unslaked lime, or ashes that have not been lixiviated, which will speedily kill these animals. For this purpose, the heap must be strewed with a thin layer of lime or ashes, and then well stirred. The earth may also, some time before the making of the truffle plantation, be shot into a hot place, and be completely dried; by which means all the worms will be destroyed: but, in this case, before making the plantation, the earth must be sufficiently moistened; and, from the drying which it has undergone, it will be found to have lost a considerable part of its efficacy in manuring.

If, by accident or mistake, the first planting of truffles should not succeed, there is only by this a whole or half a year's time lost; but the bed itself has gained, since, by means of the decayed oak leaves, a richer matter has been imparted to the earth, so that the truffles removed to it in the succeeding autumn or spring will succeed better and produce greater numbers. It is advisable, before the repeated planting of the fungi, to dig over the place destined for them and to manure it well with oak leaves. If there be time enough from the moment of the discovery of the failure of the plantation, to the time of replanting it, this manuring with oak leaves may be twice, or oftener, repeated. Too much matter from oak trees cannot be accumulated upon the plantation; since experience informs us that the taste of truffles growing wild in the woods is more delicate and aromatic in proportion as they have stood nearer to oak trees, and have grown in their shade. The same experience has been repeated in the case of artificial plantations of truffles. He who bestows much diligence and great care upon such plantations will secure to himself, in a few years, a rich harvest of well-tasted tubers, and may thank the author of this small treatise for having helped him to obtain them.

[Our readers will find a short review of the French translation of this work in our first Volume, p. 320; and some observations on the culture of the truffle in Vol. II. p. 480., Vol. III. p. 102., and Vol. IV. p. 262.]

ART. IV. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

RANUNCULÀCEÆ.

1631. CLE'MATIS 14472 flórida [Pax. mag. of bot. iv. p. 147.
*var. 3 Sieboldii D. Don Siebold's ♃ or 10 jn P.G Japan 1836 L s.l Swt. Br. fl. gard. 396.;

"This plant is one of the valuable additions made to our collections by Dr. Siebold, by whom it was introduced from Japan, of which interesting country he is now engaged in the publication of a complete account of the history, social state, and natural productions."

"The present plant," says Professor Don, "appears to have been regarded as a distinct species; but, after a most carfeul comparison with the ordinary form of *C.* flórida, we are satisfied of its being only a variety of that highly ornamental species. The leaves and branches are rather more hairy, and the petals suffused with violet spots; so that the flower has, in florists' language, a dark eye. No plant, however, possesses stronger claims to a place in the flower-garden, from its graceful habit, and from the size and beauty of its blossoms. The plant thrives best in a mixture of peat and loam, and is increased by layers." (*Swt. Br. Fl.-Gard.*, Aug.)

Caryophýlleæ.

1415. LY'CHNIS
12006*a* *Bungeàna Fisch. & Mey. Bunge's ♃ △ spl 1½ s S China 1834 C p.l Bot. mag. 3594.

Received at the Glasgow Botanic Garden (where it flowered in a warm open border) from Mr. Booth of Hamburg, under the name here adopted, and evidently intended to commemorate the services, rendered to science and botany in particular, of Dr. Alexander Bunge, who not only accompanied Professor Ledebour in his celebrated travels in the Altai, but was attached to the Russian mission which went to Pekin, during which he collected many plants in the north of China. It is nearly allied to *L.* grandiflòra *Jacq.*, and was found by Dr. Bunge in a garden at Pekin. (*Bot. Mag.*, Aug.)

Leguminòsæ § Papilionàceæ.

3392. HOSA'CK*IA*
*stolonifera *Lindl.* creeping-rooted ¥ △ cu 3 jn R N. Amer. ?1830 S s.l Bot. reg. 1977.

A stoloniferous, hardy, herbaceous plant, with a smooth taper stem. Among the last seeds sent from California by Mr. Douglas were some of this plant. It is much larger than any other known species of Hosáck*ia*, forming a stout bush about 3 ft. high, and multiplying itself readily by its creeping roots. "Although its flowers are unattractive, it forms a good shrubbery plant, where it is desirable to give the appearance of undergrowth quickly; for it resembles a shrub during the summer, and it spreads so fast as soon to extend far beyond its original station." It produces abundance of seeds in August. The embryo has sometimes three cotyledons. (*Bot. Reg.*, Aug.)

1985. LUPI'NUS
*versicolor *Lindl.* party-coloured ¾ △ or 2 m.s B.Y.P California ?1831 S co Bot. reg. 1979.

"A very beautiful perennial lupine, introduced from California by the Horticultural Society, and hitherto but little known. It has been called in the Society's garden a *dwarf Lupìnus rivulàris;* but the affinity of the species seems to be less with *L.* rivulàris than with *L.* nootkaténsis, for it has nothing of an arborescent habit. The decumbent habit of this species renders it well suited for a bed in a flower-garden: it produces a great profusion of its pale many-coloured flowers, breathing the sweet perfume of the field bean during all the months of May and June, after which it ripens its pods, and remains shabby for the rest of the year." (*Bot. Reg.*, Aug.)

Onagràceæ.

1185. CLA'RK*IA* gauröides *Doug. MS.; D. Don* in *Swt. Br. Fl.-Gard.*, 379.; *Gard. Mag.*, xiii. p. 216.
Synonyme: C. rhomboidea *Doug.* in *Hook. Fl. Bor. Amer.*, i. p. 214.; *Lindl. Bot. Reg.*, 1981.

Compósitæ.

*BAE'R*IA* Fisch. & Mey. (In honour of *Professor Baer*, of the University of Dorpat.) [Br. fl.-gard. 395.
*chrysóstoma *Fisch. & Mey.* golden-anthered ○ el 1 ap.jn Y California 1835 S co Swt.

"A curious genus of Compósitæ, raised from seeds received from M. De Fischer, director of the Imperial Botanic Garden at St. Petersburg, and recorded in the *Appendix to the Catalogue of Seeds* of that garden for 1835." It is a native of the Russian colony of Ross, in New California, and is nearly related to the genus Callíchroa. (*Swt. Br. Fl.-Gard.*, Aug.)

Ericàceæ.

1339. *R*HODODE'NDRON 11012 arbòreum var. cinnamòmeum *Bot. Reg.*, 1982.; *Arb. Brit.*, p. 1147.
Synonyme: *R.* cinnamomeum *Wall.*

Mr. Herbert informed Dr. Lindley that the old white variety of *R.* arbòreum is hardy, and has stood twelve or thirteen years in the garden at Spofforth; whence Dr. Lindley infers that this variety may also possess the same quality. (*Bot. Reg.*, Aug.)

MISCELLANEOUS INTELLIGENCE.

Art. I. *Covent Garden Market.*

The market has been fairly, but by no means heavily, supplied during the last month. The weather being generally fine and dry, all ripe fruits have met a steady and regular demand, at prices which may be considered remunerating to the growers. Since my last report, we have experienced two very high winds, and some considerable showers of rain: the former have caused a great influx of common apples and pears, blown from the trees, which have been literally given away, and had the effect of temporarily depressing the market; otherwise, the ordinary fruits of the season being in demand would have been considerably higher in prices. Cherries were much damaged by the wind and rain; raspberries were almost entirely destroyed by the same cause. Early summer pears have not been very plentiful, nor have apples been furnished very abundantly, in a general way. Of wall fruit we have as yet but little, nor is the crop generally good. Vegetables generally are in supply quite equal to the demand: the prospect for them is promising. Potatoes have been excellent, and continue to be supplied abundantly. — *C. G. M. Aug.* 24. 1837.

	From £ s. d.	To £ s. d.
The Cabbage Tribe.		
Cabbage, per dozen:		
White	0 0 10	0 1 3
Red	0 4 0	0 0 0
Plants, or Coleworts	0 2 0	0 3 0
Cauliflowers, per dozen	0 3 0	0 5 0
Broccoli, Cape, per bunch	0 0 9	0 1 0
Legumes.		
Peas, per sieve	0 3 0	0 4 6
Peas, per sack	0 8 0	0 12 0
Kidneybeans, per half sieve	0 1 6	0 2 0
Scarlet beans, per half sieve	0 1 0	0 1 3
Tubers and Roots.		
Potatoes, per ton	3 15 0	4 0 0
Potatoes, per cwt.	0 3 6	0 4 0
Potatoes, per bushel	0 1 9	0 2 0
New, per pound	0 0 1	0 0 2
Turnips, White, per bunch	0 0 2	0 0 3
Carrots, young, per bunch	0 0 4	0 0 5
Red Beet, per dozen	0 0 9	0 1 0
Horseradish, per bundle	0 1 6	0 3 6
The Spinach Tribe.		
Spinach, per half sieve	0 1 0	0 1 6
New Zealand	0 1 6	0 2 0
The Onion Tribe.		
Onions, for pickling, per half sieve	0 3 0	0 4 0
Leeks, per dozen bunches	0 1 0	0 1 6
Garlic, per pound	0 0 5	0 0 6
Shallots, per pound	0 0 8	0 0 10
Asparaginous Plants, Salads, &c.		
Lettuce, per score:		
Cos	0 1 0	0 0 0
Cabbage	0 1 0	0 0 0
Celery, per bundle (12 to 15)	0 0 9	0 1 6
Pot and Sweet Herbs.		
Parsley, per half sieve	0 1 0	0 1 6
Tarragon, per dozen bunches	0 4 0	0 0 0
Fennel, per dozen bunches	0 2 0	0 0 0
Thyme, per dozen bunches	0 2 6	0 0 0
Sage, per dozen bunches	0 2 0	0 0 0
Mint, per dozen bunches	0 2 0	0 0 0
Peppermint, dried, per dozen bunches	0 1 0	0 0 0
Marjoram, per dozen bunches	0 3 0	0 0 0
Savory, per dozen bunches	0 2 6	0 0 0
Basil, per dozen bunches	0 3 0	0 0 0
Rosemary, per dozen bunches	0 4 0	0 0 0
Lavender, per dozen bunches	0 3 0	0 0 0
Tansy, per dozen bunches	0 1 0	0 0 0
Stalks and Fruits for Tarts, Pickling, &c.		
Vegetable Marrow, per dozen	0 0 6	0 0 8
Tomatoes, per sieve	0 8 0	0 0 0
Green Capsicums, per hund.	0 1 6	0 0 0
Edible Fungi and Fuci.		
Morels, per pound	0 16 0	0 0 0
Truffles, English, per pound	0 12 0	0 14 0
Fruits.		
Apples, Dessert, per bushel:		
Juneating	0 7 0	0 8 0
Red Astracan	0 9 0	0 15 0
Baking	0 3 0	0 4 0
Pears, Dessert, per half sieve:		
Jargonelles	0 10 0	0 15 0
Citron des Carmes	0 3 0	0 0 0
Peaches, per dozen	0 12 0	1 0 0
Nectarines, per dozen	0 12 0	1 0 0
Apricots	0 3 0	0 6 0
Almonds, per peck	0 7 0	0 0 0
Plums, Dessert, per ½ sieve	0 5 0	0 8 0
Plums, Dessert, per punnet	0 0 8	0 1 0
Green gages, per punnet	0 2 0	0 4 0
Baking, per half sieve	0 2 6	0 3 0
Cherries, per pound:		
Dukes	0 2 0	0 2 6
Florence Heart	0 2 6	0 3 6
Mulberries, per gal. (2 pottles)	0 0 8	0 1 0
Gooseberries, per half sieve	0 3 0	0 3 6
Currants, per half sieve:		
Black	0 4 0	0 5 0
White	0 2 0	0 2 6
Red, for wine	0 1 9	0 2 0
Dessert	0 3 6	0 5 0
Filberts, English, per 100 lbs.	5 0 0	0 0 0
Pine-apples, per pound	0 3 0	0 7 0
Grapes, hot-house, per pound	0 1 6	0 4 0
Dutch Melons, each	0 1 6	0 3 0
English	0 2 6	0 5 0
Grapes, Lisbon, per pound	0 0 9	0 1 0
Nuts, Barcelona, per peck	0 7 0	0 0 0

THE

GARDENER'S MAGAZINE,

OCTOBER, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 8. THE SMALL ERMINE MOTH.

THE injuries to which our fruit trees are subject may be divided into four kinds: — 1st, those by which the young shoots and buds are destroyed; 2dly, those by which the leaves are affected or consumed; 3dly, those by which the fruit, in a more or less mature state, is destroyed; and, 4thly, those by which the bark is damaged. Perhaps the second of these injuries is of the most ordinary occurrence, and of the greatest extent; for it must often necessarily happen, that, should the fruit remain unattacked, the destruction of the leaves will prevent its coming to due perfection.

Of the leaf-destroyers, the most injurious species are those which live in society, enclosing themselves in a common web, which they either enlarge from time to time, or quit for the purpose of forming a larger domicile, in a situation where they can obtain a more abundant supply of food than in that which they have left. There are many species of these webbed caterpillars; and their effect is sometimes so extensive, that not only is the foliage completely consumed, but the fruit entirely destroyed, and the branches enveloped in so strong a tissue of webbing, that the young shoots, which the tree may possibly possess the power of throwing out, are impeded in their growth, and unable to force themselves through the web with which the branch is enveloped. The apple tree appears to be more especially liable to this species of injury. At the commencement of the month of July last, I observed this devastation carried to a lamentable extent in the apple trees with which the road sides between Abbeville and Paris are planted, and which for miles were completely defoliated. The branches were covered with webs, and not the least portion of green was to be seen; the webs were suspended

from the branches in festoons reaching to the ground, which, beneath the tree, appeared carpeted with silk, in so remarkable a manner as to attract the attention of the most incurious passenger. Some kinds of apples, however, as well as the pear trees, escaped. It appeared, indeed, surprising, that certain trees should be untouched, whilst the rest were so completely destroyed that it was doubtful whether they would have strength to throw out fresh shoots. This fact, however, depending upon the nice discrimination in the taste of the insects, might be beneficially employed, by inducing the planting of those varieties which appear to be most unpalatable to these destructive creatures. M. Audouin, in one of his lectures* delivered this season at the Jardin des Plantes, adverted to this circumstance, and regretted that the old law commanding the inhabitants to uncaterpillar (*décheniller*) the trees had been suffered to fall into disuse.

I at first considered that this mischief had been done by the caterpillars of the barred tree lackey moth (Clisiocámpa castrénsis), which, during the preceding month of June, had been very numerous on the apple and some other trees at Hammersmith; but M. V. Audouin informed me that it was the Yponomeùta padélla, or small ermine moth of the English collectors, that had attacked these trees; and, since my return, I have ascertained from Mr. Bainbridge, and some others, that this moth has been very injurious upon the apple trees round London. Fortunately, however, we can congratulate ourselves on its injurious propensities being far less extensive in this country than in France; for never did I witness in this country such wholesale devastation as that exhibited by the apple trees between Paris and Abbeville, mentioned above.

Order, Lepidóptera. } (See art. Rose Moths, p. 386.)
Section, Noctúrna. }

Family, Yponomeùtidæ *Stephens*. So named from the typical genus.

Genus, Yponomeùta *Fabricius*; evidently derived from the Greek word *hupo-nomos* (feeding secretly, or a burrow); having allusion to the web-spinning habits of the caterpillars.

Syn. of the genus, *P*halæ'na *T*ínea p. *Linn.*; Ermínea *Haworth*; Nýgmia *Hubner*.

Species, Yponomeùta padélla. (So named from *P*rùnus *P*àdus, or bird cherry, one of the trees upon which it occasionally feeds.)

Syn. *P*halæ'na *T*ínea padélla *Linnæus*; Ermínea pàdi *Haworth*. (*Fig.* 117.: *f* of the natural size; and *e* the same magnified, with the wings expanded.)

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* I attended several of these lectures (the entire course of which consisted of about fifty, in which the professor especially treated upon the insects injurious to vegetation); and I was gratified at observing the considerable number and respectability of the audience, whose interest in the subject was evinced by the copious notes made by many of them. Several ladies were amongst the number.

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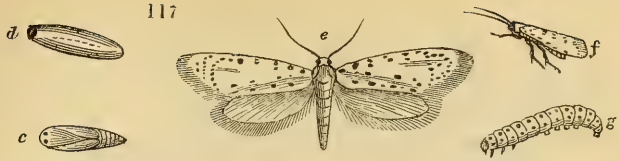

Anterior wings ordinarily of a leaden white, with about thirty remote minute black spots, disposed somewhat regularly in longitudinal rows, but on the hinder margin they are more irregular, and tend to a transverse disposition: cilia livid. Posterior wings lead-coloured: cilia rather paler. Extremely variable: some examples having the ground of the anterior wings white; others with the costa livid, and the inner margin white; some with a livid or pale lead-coloured central cloud; others, again, entirely of a pale or deep lead colour; and all intermediate shades occur: the number of spots also varies. (*Stephens Illust. Brit. Ent. Lepid.*, vol. iv. p. 243.)

The caterpillar (*fig.* 117., *g*, rather magnified) of this moth is of an ashy white colour, with a brownish head, and a number of small black spots, of which the largest form a series on each side of the body. It has sixteen feet, the three anterior pairs being articulated, and attached to the three anterior segments. The four following pairs are membranaceous, false, ventral legs; and the terminal pair anal, and also membranaceous. They are below the middle size, and the body is smooth. In regard to the predilection of this caterpillar for any particular kind of food, I have already noticed that only some kinds of apples were affected; which is the more remarkable, because its principal food (whence its specific name is derived) is the bird cherry, although the white thorn is also even more subject to its attacks; whole hedges being sometimes entirely defoliated in summer, and covered with webs. The remark of De Geer and Réaumur (*Mémoires*, tom ii. mém. viii. p. 324.), that caterpillars, in general, prefer that particular kind of plant upon which they were produced, will enable us in some measure to account for this predilection; but, unless we suppose that the parent moth always chooses, in like manner, the kind of tree upon which it had fed whilst in the caterpillar state for the reception of its eggs, we can hardly account for the fact, that in one situation the white thorn alone is attacked, and the fruit trees untouched; whilst in another it is only one kind of apple tree that is injured.

It is a peculiarity in the history of this insect, that it is not only social in the caterpillar state (*fig.* 118. *a*), but that it retains its sociality during the period of its pupation (*b*), the cocoons

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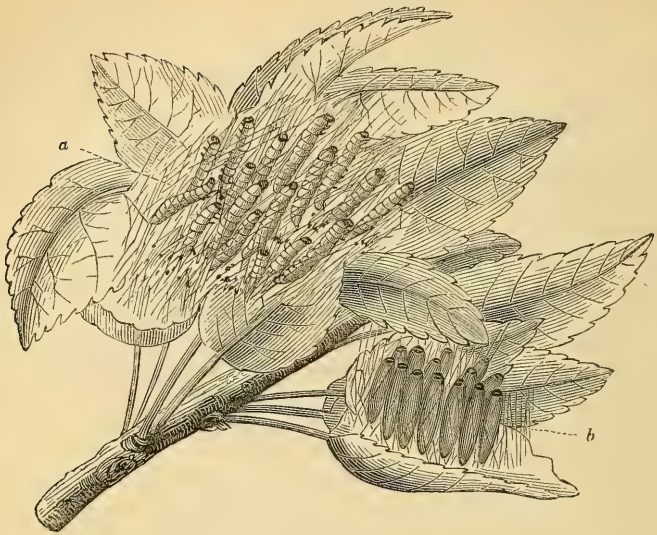


being formed within the web which had served for the abode of the caterpillars. These webs are quitted from time to time, and new encampments established at short distances from each other; hence, each brood constructs several webs in the course of its caterpillar state; the reason of which is, that the caterpillars do not quit their webs to feed, but only eat such leaves as are enclosed in each web. The number of inhabitants in a colony varies from one hundred to two hundred; and, hence, the more numerous the colony, the more frequently is a change of residence required. These webs consist of a great number of threads not unlike spider webs, arranged somewhat irregularly, but sufficiently loose to enable the inhabitants to be seen through the covering. The caterpillars eat only the parenchyma of the upper side of the leaf; they also arrange their threads longitudinally, each, apparently, having a thread of its own, along which it moves either backwards or forwards without disturbing its neighbours, which, when in repose, are arranged side by side. The larger-sized nests include several of the smaller branches or twigs with their leaves; and some parts are of a firmer texture than the rest, apparently for resisting the wet. When the parenchyma of the upper sides of the leaves enclosed in the web have been consumed, the nest is abandoned, and a new one made, enclosing a fresh bunch of twigs, each of the caterpillars spinning a considerable number of threads; and thus, each colony constructs as many as six or eight distinct webs, disfiguring the tree, especially when, as is often the case, there are

many societies established upon it. The leaves, thus half consumed, wither up, as well as the young branches, for want of support, and the tree assumes the appearance of having been entirely scorched up with fire. The caterpillars rarely quit their nests; but, when alarmed or disturbed, they endeavour to make their escape by spinning a long thread, and dropping to the ground. When touched, also, they writhe about with great activity, and will run backwards nearly as fast as forwards.

When full grown, about the beginning of July, each caterpillar encloses itself in a long and nearly cylindrical cocoon of white silk (*fig.* 117. *d*), of a leathery consistence; and these cocoons are arranged side by side at one end of the nest, forming a mass not unlike, only considerably larger than, a mass of ants' eggs, as the cocoons of the ant are commonly called. As the whole of a colony has been reared from one brood of eggs, it is generally the case that the entire number commence the construction of their cocoons at the same time, and the whole are generally completed in the same day. In this cocoon, the insect immediately undergoes its change to the chrysalis state (*fig.* 117. *c*); and its chrysalis, which does not materially differ from those of other small lepidopterous insects, is of a shining chestnut colour. It differs, however, from the chrysalides of the leaf-rollers, in wanting the tranverse series of hooks with which the abdominal segments of the latter chrysalides are furnished; and hence, when, at the expiration of about twenty days, the perfect insect is ready to come forth, the insect being unable to work the chrysalis out of the cocoon, the escape of the imago is effected within the latter, and the moth, with its wings in an unexpanded state, makes its way out of one end of the cocoon, after which its wings soon spread to their full size.

The perfect insects, owing to their very conspicuous appearance, and their great numbers, are to be observed in the greatest abundance flying over the trees of hedges. In this state, their only object is to perpetuate their kind. The manner in which the eggs are deposited, and the young caterpillars developed, appears first to have been noticed by Mr. Major (*Treatise*, p. 51.); but subsequently, with more precision, by Mr. Lewis (*Trans. Ent. Soc.*, i. p. 22.). The former writer states that, on the 29th of July, he found the parent coating her eggs over, which she appeared just to have been depositing, with gummy matter (employing her tail in the operation), which, when dry, forms a thin shell or scale, about the eighth of an inch in diameter. On the 19th of October, on examining the scale, he found twenty-six caterpillars existing, which he was persuaded had never left their abode, as at that time all the parts were completely shut up, and, indeed, the edges of the scale were fast cemented to the

branch. He thinks it probable that they may derive some little support from the sap of the branch under the shell or covering where they reside; but it is quite clear that they never emerge from their birthplace to obtain food, or form any additional residence, till they are influenced by the warmth in the following spring:—Mr. Lewis takes up the observation where it had been left by Mr. Major, and states that, about the time that the trees are coming into leaf, the caterpillars make their escape; but they do not commence spinning webs immediately: they cannot yet eat the epidermis of the leaves, and they require some protection from the cold and rain, which their tender frames are not yet fitted to endure: to effect this they mine into the leaves, ea ting the cellular tissue only, and leaving the epidermis untouched. Having acquired sufficient strength to withstand the vicissitudes of the atmosphere, and to devour the epidermis of the leaves, they make their way out; and the anxious gardener, who has hitherto only observed the brownness of the leaves caused by the mining, but which is by him attributed to the withering blast of an easterly wind, is astonished when he perceives myriads of caterpillars swarming on his trees, and proceeding with alarming rapidity in their devastating course. The fact of their mining sufficiently explains the reason of their sudden appearance: it shows how one day not a single caterpillar may be visible on the trees, and the next they may be swarming with larvæ, of so large a size as to rebut the idea of their having been recently hatched.

For the destruction of these insects, various plans have been recommended. Mr. Major says that nothing more is required than the application of strong soapsuds forcibly applied with the engine, so as to break the web, that the suds may reach the insects. Where the trees are not much infested, gather the webs including the caterpillars, by hand, and destroy them in any way most convenient. Care should, however, in these cases, be taken to kill, and not merely to disturb, the caterpillars. Mr. Lewis suggests the picking off and burning of the leaves whilst the caterpillars are in the mining state; the presence of the insects being indicated by the blighted outward appearance of the leaf: but prevention is always better than cure, and it seems to me easier, as well as more advantageous, to destroy the moths as soon as they are produced, and before they have had time to deposit their eggs. The generally simultaneous appearance of the entire brood in the winged state, together with the very conspicuous appearance of the moth, will render this a matter of great facility. A sheet may be laid beneath the branches in the daytime, which should then be sharply struck with a stick; when the moths, which at that time are sluggish, will fall into the sheet,

and may be easily destroyed; and the destruction of one moth will thus prevent the injuries arising from one, if not several, colonies of caterpillars in the following season.

ART. II. *Some Account of Gardens and the State of Gardening in the County of Durham.* By J. B. W.

(*Continued from* p. 203.)

DARLINGTON is a thriving town, a few miles on the Durham side of the Tees, which river separates the counties of Durham and York. Its prosperity is owing, in a great measure, to the coal trade, for which it is a central dépôt, being connected by a railway with Wilton Park colliery and the port of Stockton, and by another railway with a village called Croft, whence an extensive district is supplied with fuel. Several branches of manufacture are likewise carried on at Darlington, but not to any great extent.

Many of the principal merchants and bankers have villas on the outskirts of the town, to some of which neat gardens are attached. One of the best of these belongs to Joseph Pease, Esq., jun., M.P. This gentleman is a member of the Society of Friends, of whose creed it is well known to be a leading principle to abjure the "glitter and glare of ornament;" and the influence of this principle is as visible in the absence of architectural embellishment from the exterior of their buildings, as it is in the simplicity and neatness of their dress. All the mansions that I have seen belonging to gentlemen of this persuasion have a great similarity of character: they are plain brick structures, with, in most cases, an equally plain portico at the chief entrance, and generally having roses and other flowering shrubs trained up the walls. Mr. Pease's house and grounds occupy an angle formed by the junction of two public roads, which constitute the boundary line on two sides: notwithstanding this disadvantage, however, considerable skill is displayed in the laying out of this circumscribed space, particularly in placing the plantations so as effectually to hide the view of the adjoining town, and in causing the paddocks in front of the house to assume something of a park-like character, by judicious planting, and the absence of conspicuous fences. On the lawn, among many of the less common varieties of *Quércus*, *Cratæ`gus*, &c., there is a fine specimen of the fern-leaved beech, which appears to keep pace in growth with the common species. The hot-houses stand at the back of the lawn, between the mansion and the kitchen-garden. Stove plants are grown in one, and in the other is the best collection of pelargoniums I have yet seen in the north; but, as the roofs of these

flat than common, and have vines trained upon the rafters, they are not well adapted for the cultivation of plants; neither do the vines seem to succeed well. Some variously formed beds in front of and about these houses constitute the flower-garden, in which there is a good selection of herbaceous plants, and an excellent assortment of calceolarias, dahlias, and pansies. Mr. Stephenson, the gardener, is an inveterate hybridiser, and has raised several distinct and superior varieties of these flowers, and also of pelargoniums and petunias.

In the kitchen-garden (which is separated from the flower department by a screen of trees and shrubs), there is a wall of fine young peach trees, which, when I saw them (June 20.), were just recovering from the blighting influence of the late unparalleled spring. The soil excavated from a pond contiguous to the flower-garden has been turned to good account in the formation of a small mound, upon the top of which Mr. Stephenson has constructed an exceedingly pretty moss-house.

At West Lodge, late the Residence of J. Backhouse, Esq., the pleasure-ground is, for a suburban place, extensive; and the trees it contains bear marks of greater age than those usually seen at such places. The mansion, too, looks more ancient than any of the surrounding villas; and the whole place has an expression of solitude, which a visitor feels more forcibly from its proximity to a bustling and populous town. A large, but most unornamental, green-house stands in a corner of this lawn; and joining this house, at one end, there is a sort of home-made aviary, one division of which has been clumsily metamorphosed into a plant-house. But the green-house, although so uninviting in its exterior, contained, at the period of my visit (June 20.), a large collection of calceolarias most superiorly cultivated: in fact, previously to my seeing these plants I had no conception of the perfection to which the calceolaria might be brought by care and skill. The general collection of green-house plants is respectable; and, among them, I was particularly struck with a beautiful light-coloured salpiglossis, called there S. striàta. On the north side of the pleasure-ground, a square plot (formerly the kitchen-garden) is laid out as a geometrical flower-garden; but the beds do not exhibit much variety or elegance of form. The divisions between the beds are of gravel, with box edgings. Herbaceous plants occupy most of these beds; a few, however, are planted with flowering shrubs, as roses and fuchsias; and others are devoted to bulbs, which are succeeded by dahlias or annuals. There is a small vinery in this department, which is fitted up for the reception of plants in winter: vines are also grown in the large green-house; but, as is generally the case in similar places, the fruit they produce is not very good.

In the melon-ground I noticed a fine-looking variety of cucum-

ber, called somebody's white-spined. Of melons, the Egyptian green-fleshed is preferred to all others.

In the kitchen-garden (which stands behind the flower-garden and the melon-ground) a highly picturesque Swiss cottage has lately been erected for the gardener, Mr. Lawson.

The mansion is well situated on the brow of a gentle slope, looking to the east, and commands a fine view of the Cleveland Hills over the intervening vale. Here there is a very pretty lawn in front of the house, but no regular flower-garden; and the kitchen-garden is merely a narrow slip; it, however, can boast of a wall of the best peach and apricot trees that I have seen for some years.

A few hundred yards from the last-mentioned place, and possessing similar natural advantages, is *Polam Hill, the residence of another of the Messrs. Backhouse.* But the grounds at this place, in defiance of their natural capabilities, exhibit a wretched perversion of taste, or, I should rather say, a total absence of taste, in the laying out. Seen from a slightly raised grass terrace on the south front, the pleasure-ground greatly resembles a game-cover, in which the trees have been planted "without end or aim," except for producing shelter. The terrace is continued along the east front; and a gravel walk leading from it descends by a few steps into a small geometrical flower-garden on the north side of the mansion. The kitchen-garden here is of a good size, and two hot-houses in it contain the best-managed vines that have come under my observation in the neighbourhood of Darlington. These houses are heated by hot water, and, in winter, are filled with pelargoniums and other flowering plants, in the culture of which Mr. Byears, the gardener, is said to excel.

When the convenience and cheapness of fuel are considered, it is rather a matter of susprise that the forcing of fruits and vegetables is so little practised round Darlington. Not one of the four gardens above described contains a peach-house; nor does the grape appear to form part of the dessert earlier than the end of June or the beginning of July. Floriculture, in its many-coloured mantle, is decidedly in greater favour than its more substantial relative, horticulture, although its claims to our consideration are unquestionably of a much weaker character. I do not sympathise in taste with that celebrated personage who exclaimed, "Of all the flowers in the garden, give me the cauliflower;" still the immense importance of fruits and vegetables, as articles of subsistence, leaving out of view the comforts and pleasures they afford us, assuredly demands for them the highest rank in our estimation.

August, 1837.

ART. III. *On acclimatising exotic Plants in British Gardens.* By N. M. T.

NOTWITHSTANDING the small progress that has been made in acclimatising exotics, it is evident that a numerous class of these plants, when in proper condition, are capable of bearing the severity of our winters. Of this fact, the great numbers that survive the first winter after planting out afford a most convincing proof; and, by paying a little attention to the subject, we find that those that die are destroyed by the shortness of our summer, rather than the severity of our winter. We often find a plant that has stood several hard winters cut off in one that is comparatively mild; and, therefore, its death must be attributed to the condition of the plant, not to the great degree of cold to which it is exposed.

At midsummer, I planted out several sorts: all of them had completed their growth for the season; consequently, they had the rest of the summer to ripen their wood, and form vigorous buds for next season. Those planted out a year sooner are in a very different condition: they have merely begun to grow, and will scarcely have completed their growth before winter; it will therefore be found that their shoots are green, full of sap, and altogether unable to resist any degree of cold. If they are not completely killed by the first frost, their shoots will be destroyed to a few of the first-formed buds, which will make an effort to expand, until the tree is completely worn out. Two or three years, according to circumstances, will put an end to this stunted existence. That many plants, when planted out, will perish, even under the best management, is evident; still I consider the rapid decline of many may, in a great measure, be attributed to the treatment they receive. At the approach of winter, while yet green and full of sap, they are cooped up in some sort of covering; where, in a close, putrid, rotting atmosphere, ready for every frost, they are compelled to remain (should they survive) until spring. On the first few fine days that may then occur, the covering is partly or wholly removed; lest its shelter should induce the plants to precede the season. A plant thus deprived of protection, when it is most necessary to its existence, has its juices chilled and stagnated; the bursting bud, or young shoot, is destroyed; and the plant, thus checked in its vegetation, is left to produce a few green and feeble shoots, late in autumn. Yet a plant, so plainly destroyed by its treatment in spring, is calmly placed to the account of the deaths occasioned by the severity of the succeeding winter. But this treatment ought not, in every case, to be laid to the charge of the gardener: his employer is often altogether to blame. The unsightly objects of protection

become unbearable eyesores in spring; and, as such, they must be removed, at whatever risk. The gardener, who is thus compelled to expose his plants, is often doomed to find those he left rich in foliage, a putrid wreck.

If such a practice so materially shortens the duration of tender plants, might not one more natural do much to avert such a calamity? As many of them are able to withstand our winters, protection, except in cases of extreme severity, is unnecessary. But it is of the greatest importance to call them into early and vigorous action, and thereby to lengthen the duration of summer, so that they may be able completely to establish themselves before winter. To accomplish this, I would extend the winter protection to the roots and stems only; and withold the rest until early in the spring. Exotics naturally commence growing much sooner than our climate, without some artifice, will admit. Protection, applied at the time they are thus excited, must be extremely grateful, and in some it will act like spring. Instead of being removed as the season advances, such protection ought to be augmented, and every stimulus applied and continued, until summer be finally established, and a recurrence of hard weather out of the question. Plants thus forwarded would be able to make the most of every gleam of summer, and would be ready to retire to rest at its decline.

Such a system of protection would be attended with splendid results, were the portable glass structures that you have so often recommended in general use: nothing, but our bigoted adherence to that which *is*, could so long have kept them from occupying the station that they must some day hold in the establishment of the horticulturist. A fixed peach-house or vinery will probably be as great a curiosity in the next century as a curvilinear one would have been in the last. Who would raise an expensive fixed structure, that could be used only half the year, when a portable one would cost less, and might be employed to advantage every day? When such a revolution takes place, it must be a death-blow to curvilinears; for, with all their docility, I do not think they could be adapted to the migratory system. I am not by any means hostile to curvilinear houses: I know them to be well adapted to the culture of many things, according to the present mode; and, were I a proprietor regardless of expense, and anxious for something to look at, I should most probably raise one with more curves than ever graced yours at Bayswater. But, were I to erect what I consider would be most useful, I would not think of building a fixed glass structure for plants of any sort.

I have by me plans of several of my proposed movable structures; and, if you think that they can interest any of your

readers, they are at your service. [We shall be exceedingly glad to receive these plans.]

Should my remarks in the preceding part of this paper meet your approbation, I hope that, in more forcible language, you will press them on the attention of your readers: there is something in the present practice radically wrong.

Folkstone, August 4. 1837.

ART. IV. *On the Propagation of the Pine and Fir Tribe, and other Coníferæ, by Cuttings.* By T. M. LINDSAY, Gardener at High Clere.

FROM some time previous to the summer of 1835, on to the present time, I have taken considerable pains to ascertain the best possible means of procuring plants of those species of Coníferæ which, at present, are extremely rare in this country, and yet very desirable; and of the seeds of which there are so many difficulties attending the procuring and importation, that it is absolutely necessary for those who wish to have such things, to devise some other means of procuring them than that of raising them from seed.

Having been successful in raising a few of the scarcer species, and also some of the more common, by cuttings, and, with no great deal of trouble or attention, I have at last arrived at a conclusion, that the whole tribe of Coníferæ, in the absence of seeds, may be very advantageously raised by cuttings. The species that I have raised by cuttings are as follows: —

TA'XINÆ Richard.

*T*áxus baccàta var. variegàta.

CUPRE'SSINÆ Richard.

*J*uníperus recúrva.
Tournefórtii.
expánsa.
prostràta.
nàna.

ABIE'TINÆ Richard.

*A*bies *Morínda.*
Douglàsii.
Menzièsii.
Webbiàna.
Clanbrasiliàna.

*A*bie amábilis.
nóbilis.
Píchta.
*P*ícea.
excélsa.
nìgra.
*L*àrix microcárpa.
*C*èdrus Libàni.
Deodàra.
*P*ìnus excélsa.
mo ntícola.
Cémbra
halepénsis.
sylvéstris.
Araucària imbricàta.
Cunninghàm*ia* lanceolàta.

I have found the autumn the best time to put in the cuttings; and, though the early spring will answer the purpose, I have not found success so certain at that season. The sort of cuttings I prefer are the smallest I can select, from 2 in. to 3 in. long, of the current year's growth, just as the wood has ripened; say about

the beginning or end of October. The cuttings should be taken off close, at the commencement of the season's growth; or if stripped off, and then cut, so much the better. I have found silver, or pure white, sand, with a small portion of peat or heath mould, answer the purpose better than sand alone. With respect to bottom heat, I have been successful both with and without it; but should certainly say that a little, at a certain season, was of service, although by no means when the cuttings are first put in. I would recommend the cuttings, for the first five or six weeks, to be covered with a bell-glass, and placed in a shaded part of any house or pit where the thermometer generally stands about 60°; after which they may have a little bottom heat, which may be increased until they are rooted. It is doubted by many, whether plants of Coníferæ raised from cuttings will ever form leaders, like seedling plants, unless a leader be selected for the cutting. I can only say that all I have raised have formed good leaders, and many of them have grown 6 in. this season (1837). It is well known to many that the common spruce fir and others will, in certain situations, layer themselves, and from the points, &c., of their lower branches throw up as good trees as the original. In the statement of the "Whim Spruce" (p. 249.), and also on this estate, we have instances of the common spruce performing exactly the same thing; and here, in many instances, they have formed the fourth tree from the original, the situation being quite different from that at the Whim, and an exposed place on a solid bed of chalk. When layers are found to form good leaders, I think cuttings are quite as likely to do so.

High Clere, July 20. 1837.

ART. V. *An Account of the Mode in which the large Palm at Hale Hall, Lancashire, was lowered Five Feet.* By JOHN NICKSON, Gardener to J. J. Blackburn, Esq., M.P., at Hale Hall.

THE following is the method in which the large palm at Hale Hall was lowered 5 ft. in April, 1834; and I shall feel proud if you think it worthy of a place in your Magazine.

The *Sabal* Blackburn*iana* (a description and history of which are given in Vol. V.) becoming too high for the house, I received permission to lower it, which I accomplished in the following manner: —

For several months previous to the undertaking, the house was kept at a low temperature, and water was withheld from the roots, in order to suspend the growth of the tree, and enable it to withstand the operation. A drain was also cut, of sufficient depth to keep the foundation dry. I then commenced by

cutting a broad trench round the wall, which I expected enclosed the roots, but found they had penetrated through several fissures to the full extent of the house. Believing the destruction of these might prove injurious, I had them carefully taken up, the wall removed, and the roots placed upon the ball, and covered with mats, to protect them from injury. The trench was then continued 8 ft. deep, which left the tree upon a square base of marl, which I caused to be stayed on all sides to keep it upright. A cut, 18 in. wide, and 24 in. deep, was then made underneath the roots, from north to south, and one also from east to west, which reduced it to four pillars, that gradually gave way by the weight of the tree, as the base of each pillar was diminished. This was repeated until the tree was brought (without the least shock) to the required depth. The wall was then rebuilt, leaving a space of 9 in. round the wall, which was filled with fresh sandy soil, and the roots spread therein as the wall advanced. This being completed, the trench was then filled with warm oak leaves, diffusing a mild heat through the ball, which was watered by a gentle stream, until the whole mass became saturated; the house was then kept warm and moist; and the tree, thus excited, soon exhibited a growth at each extremity that removed all apprehensions for its safety. When the heat of the oak leaves had declined, and a renewal was no longer necessary, I had them removed, and the space filled with broken bricks, to keep it dry; upon these a walk is formed on a level with the surface of the roots, communicating by steps with the front and back paths of the house. The sides are supported by rockwork, planted with moss, fern, and other umbrageous plants, which has certainly improved the appearance of the palm, and added novelty to the arrangement.

I was informed by many for whose horticultural skill I have great respect, that I was running great risk of depriving this country of one of its greatest vegetable ornaments, or, at least, of bringing on a sickly appearance, if not sudden death; but, with confidence in the above arrangements, which I had planned after long consideration, I persevered, and have now the satisfaction to see it flowering for the fourth time in its new situation, and growing as vigorously as ever.

Hale Hall, Aug. 18. 1837.

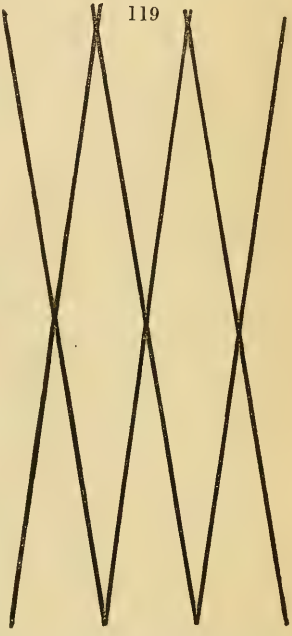
ART. VI. *A Mode of training the Sweet Pea in Flower-Gardens.* By JOHN FYFFE, Gardener at Milton Bryant.

THE sweet pea is esteemed by most lovers of the flower-garden for its rich profusion of flowers, and the delicate perfume which they put forth after a refreshing shower. We conse-

quently meet with it in most of our flower-gardens, either in rows or patches, supported in the common way by brushwood stakes; though this method is very unsightly to the eye of a lover of neatness and order, making the flower-garden resemble the kitchen department, from which it ought to be kept quite distinct.

The method which I have adopted for training the sweet pea is this: — Having procured a quantity of straight hazel rods about the length of 6 ft., I cut them down the centre, painting them with light green paint, and place them in the manner shown in *fig.* 119.; fixing them firmly in the ground, and tying them at the top with small twine. When finished in the above manner, they have a much neater and more agreeable appearance to the eye of a lover of floriculture, than rough brushwood stakes, which are so unsightly, and appear so unsuitable among delicate flowers. After the hazel rods are fixed in the above manner, I plant the peas among some rich stuff along the bottom, in a row (having previously forwarded them in a cold frame); and, by tying them neatly to the trellis with matting as they advance, they will have a neat and light appearance when the trellis is covered.

119



I also think that fuchsias, heliotropes, salvias, salpiglossises, eccremocarpuses, lophospermums, cobœas, tropæolums, maurandyas, rhodochitons, &c., would look very well trained in the above manner, the height of the stakes being regulated according to the growth of the different species.

There are several plants trained in this manner here, and they have a good effect. The good taste which Mrs. Mansfield possesses for flowers, induces her to spare no expense in beautifying and adorning the flower-garden.

Melton Bryant, July 17. 1837.

ART. VII. *On the Culture of an early Crop of Melons.* By JAMES CUTHILL.

IT is always my earnest wish to lay before my brother gardeners, any improvement that it may be my good luck to find out,

hoping that they will do the same in return. Publicity has done much for our business these last ten years; but I am sorry to say that there are some gardeners who condemn all writers and books upon gardening, and who yet take in all gardening publications, and very much profit by them, though they never make known their own improvements. I have been requested by several of my acquaintances to inform them if I had made any improvement in the culture of early melons; and I have taken the only way to inform them that all gardeners should take; that is, in a public way. The melons that I cultivate for the first crop are the early Cantaloup, not the golden. Its greatest weight is about two pounds; its flavour is good when grown with plenty of sun; but, like all other early fruits that are forced without much sun, the flavour cannot be expected to be so good, and more particularly in such seasons as we have had of late. During the last spring, up to the 13th of May, we had only 150 hours' sun altogether. The seeds of my early melons were sown upon the 30th of January, once topped, and planted in the pit the 8th of March: they showed fruit April 1st, and set upon the 5th, which fruit they ripened upon the 5th of May; and upon the 13th of last May a medal was awarded for one of mine at the London Society. Now, the grand secret (and when the idea first struck me I was quite enraptured, well knowing that it was good) is this: — As soon as the melon was the size of a walnut, I covered it with a propagating glass, which I filled with sand; and, at the same time, plunged a thermometer into the sand, which generally stood about 90°, while the atmosphere of the pit stood about 75°. Later than May, the plan will not answer, because we allow the lining to get low. The great thing in my improvement is, that the gardener can get early melons whether there is sun or not. To the above, I shall add a few useful hints. In the first place, I never top young plants more than twice: if topped more, they throw out more vine than is wanting; and then the knife is used, which they dislike above all things. Secondly, after the hills are first made, I do not add to them, but mould all over the pit; so that at each moulding the roots are starting upwards. Thirdly, watering is done in the middle of the day, in order to steam the plants and to keep down insects, but never upon the centre, for fear of canker. Fourthly, I prefer having the fruit a good distance from the roots; as, when the sap has to pass so many leaves and joints, the fruit are undoubtedly better-flavoured. The compost I use is loam and dung, not too hard pressed.

Dyrham Park Gardens, August 15. 1837.

ART. VIII. *On the forcing of early Cucumbers in Pits heated by Fires.* By J. WIGHTON, Gardener to Lord Stafford, Cossey Hall.

THIS method possesses a decided advantage over the old plan of beds made with manure, which are very uncertain, and attended with great trouble. Beds made with dung soon lose their heat, which must be renewed by linings of manure; and these often burn the roots of the plants. If great care be not also taken, the steam from the dung will make its way into the beds, and destroy the plants. The heated vapour from the dung, when it penetrates the beds, is injurious to the plants; and, in dull weather, it keeps the beds in a wet state, so that the plants will become sickly, if they do not decay with damp.

All this is prevented by forcing with fire heat; for the heated flue prevents the necessity of using linings of manure, and keeps the pits dry, and free from noxious vapours. There is, also, no danger of burning the roots of the plants, as the flues are above the soil. The pits are filled with oak leaves, and thus keep their heat for a long time.

One of my pits is heated by hot water. This I consider preferable to brick flues for pits; because the pipes occupy less room, the heat is more steady and uniform, and less fire is requisite. I keep the pits up to from 60° to 75° of Fahrenheit; and use no covering at night, unless the weather be very cold. I allow one plant only to a light; sprinkle the plants every morning and evening with water a little warmed; and pour some on the flues, to produce a steam, which greatly promotes the growth of the plants.

As old customs are not easily relinquished, various objections will probably be raised against this method. In the first place, it may be objected that the expense would be greater than the old method with manure; secondly, that the dry heat will encourage the red spider; and thirdly, that it will never answer to set a large pit to work in order to raise a few plants.

To the first objection, it may be replied, that, where a good deal of forcing is going forward, a supply of early cucumbers is highly desirable; and, if they are grown for sale, they will amply pay for the expense of firing. To the second, I have used the fire pits for eight years, and never found the red spider more common than in the old-fashioned beds. They are kept off by the watering and steaming. To the third, I may observe that my plants are raised in one of the forcing-houses. Since this method of growing cucumbers has been adopted, I have been very successful, and have not had half the anxiety which was inseparable from the old plan of beds with manure.

Cossey Hall, Feb. 10. 1837.

Art. IX. *On the Culture of the Pea.* By A. Forsyth.

The best sorts that I am acquainted with are, the early frame, early Warwick, Bishop's early dwarf, Spanish dwarf, Knight's wrinkled marrow (tall and dwarf), blue Prussian, dwarf green imperial, Charlton.

Peas are forced, in pots (about 12 plants in a 16-sized pot), placed on the shelves, or planted out in the area of the peach-house, or any other forcing-house where a mild temperature is maintained; and, if plenty of air can be given, without injury to the fruit trees, and the pea blossoms can be brought anywise near the glass, most of the early varieties will succeed well: early frame and early Warwick I should prefer.

To obtain an early crop in the open border, the simplest and surest system that I have proved is as follows: — About Martinmas, sow a bed of peas, as thick as one seed can lie by another; say, nine seeds in a square inch: at this rate, a square foot of seed-bed will plant 54 ft. of row, at two plants to an inch; or, a bed 13 ft. long, and 5 ft. wide, will give plants for 20 poles of ground; and can be protected (see my article on strawberries) with four mats, erected on a few straight sticks, which any labourer may get up in one hour; and can be covered, or uncovered, in one minute. Early in March, they may be planted out in drills, 6 in. and 3 ft., alternately, apart; and 1 in. lower than they stood in the seed-bed.

About Christmas, another sowing may be made in the matted bed, for a succession, and treated as above; and a third, in the open ground, about Candlemas, in drills, as above, running north and south, about 3 in. deep, and three seeds to an inch, longitudally. A row of plants, of Bishop's early dwarf, may be planted in the slip close to the wall, on a south border, early in March, without being injurious or unsightly, on account of their dwarf habits: it is a very common and sure-footed rule, to sow a successional crop as soon as the plants of the preceding, are 1 in. above ground. As the plants advance, let the ground between the rows be frequently stirred, drawing it towards the rows of peas, which, when about 6 in. high, will require to be supported by sticks, corresponding in height with their respective habits of growth. Peas may be dwarfed a little, and somewhat forwarded into fruit, by topping their leaders a little before the blossoms appear. For late peas, take out trenches, 3 ft. apart, 9 in. wide, and 9 in. deep; in the bottom of these, lay a layer of old hot-bed dung, 3 in. deep, and over this a layer of soil, 3 in.; then sow the peas as directed above, and cover them with about 1 in. of soil; give the whole a good drenching with water; fill in the rest of the soil, and pass the roller over the whole square. This stratum of dung, when thoroughly wetted, will retain a moisture under the peas, which

will prove of the greatest service at this trying season, which may be from the 1st of June till the middle of July; say three sowings, June 4. and 24., and July 14. The system of sowing peas onstr ips of turf, in a cold frame, to be planted out *en masse* in March, is a beautiful and workmanlike system, where it can be practised; but even turf, common as it is, is sometimes both scarce and dear in the suburbs. In ordinary cases, I should not sow peas in the open ground, where they are to remain, before February.

Isleworth, January, 1837.

ART. X. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, and Librarian to the Linnæan Society.

The Botanist; in monthly numbers, each containing four plates, with two pages of letterpress; 8vo, large paper, 2*s.* 6*d.*; small paper, 1*s.* 6*d.* Conducted by B. Maund, Esq., F.L.S., assisted by the Rev. J. S. Henslow, M.A., F.L.S., &c., Professor of Botany in the University of Cambridge.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

The Floral Cabinet; in monthly numbers, 4to; 2*s.* 6*d.* each. Conducted by G. B. Knowles, Esq., and Frederick Westcott, Esq., Honorary Secretaries of the Birmingham Botanical and Horticultural Society.

RANUNCULÀCEÆ.

1599. DELPHI'NIUM 14154 intermèdium
*cærulèscens *Lindl. downy-leaved* ♃ △ or 7 jl L.B ... ?1836 D co Bot. reg. 1934.

A very striking variety of *D.* intermèdium, with the palest flowers of any that Dr. Lindley is acquainted with, and perhaps, also, the tallest stem. The leaves have their base decidedly truncate, as in *D.* palmatífidum *B. R.*, 1963., which is another variety of *D.* intermèdium. There are plants in the Horticultural Society's Garden. (*Bot. Reg.*, Sept.)

Caryophýlleæ.

†1388. SILE'NE 11627 compácta
Synonyme: S. purpùrea *Knowles & Westcott*, Flor. Cab. 42.

A hardy annual, growing to the height of about 3 ft., covered with a glaucous hue; branched towards the top, where the flowers, which are in dense heads on short pedicels, assume a livid purple colour, more or less intense. It is a beautiful and free-flowering annual, continuing in bloom from the beginning of June till the end of August. It requires no particular soil, and ripens seeds freely. If sown in the autumn, it will endure our ordinary winters, and come into flower in May; and, sown late in spring, the plants will continue flowering till killed by the frost. (*Flor. Cab.*, Sept.)

Oxalídeæ.

1414. *O*'XALIS [398.
*álba *D. Don* white-*flowered* ♀ △ pr ¾ my W ? America 1836 O co Swt. Br. fl.-gard

"Nearly related to *O.* bipartìta of the *Fl. Brasil. Merid.* of A. de St. Hilaire, but in that the scapes are dichotomous, bearing from three to seven flowers; the sepals biglandose at the apex; the stamens monadelphous, with the longer ones toothless, and the styles combined at the base." Its native country is not known; but it is probably American, being nearly allied to *O.* bipartìta and divérgens. The plant was received, by Dr. Neill of Edinburgh, from Mr. Lawson, seedsman there, who had it from Messrs. Henry Storr and Sons, florists, Haarlem. The leaves have a singular appearance, being ternate, with the leaflets deeply bipartite, and the divisions linear and divaricate, and 2 in. long. (*Swt. Br. Fl.-Gard.*, Sept.)

Leguminòsæ.

1258. EUTA'XIA
*Báxteri Knowl. & Westc. Baxter's ♚ ⌊ pr 6 ... Y N. Holl. 1830 C s.p.l Flor. cab. 43.

"An evergreen, and by no means handsome in its growth, being naked until near the top of the stem, when it sends off several long rambling branches; but, notwithstanding, its foliage and inflorescence form a pleasing addition to the green-house. The plants are rather disposed to run too high; to prevent which, and to form bushy plants, the leading shoots should be often topped during summer. Leaves opposite, or in threes, leathery, inversely ovate, mucronate, veined. Flowers axillary, in threes." (*Flor. Cab.*, Sept.)

Rosàceæ.

1535*a*. *COWA'N*IA* D. Don. The Cowania. (In honour of the late Mr. *James Cowan*, who, in the capacity of a merchant, had occasion to visit Peru and Mexico, whence he introduced a number of interesting plants, then new, to our collections.)
*plicàta *D. Don* plaited-*leaved* ♚ pr 2 jn R Mexico ... D s.p Swt. Br. fl.-gard. 400.

Cowa'*NIA*. Calyx 5-cleft. Petals 5. Ovaries 5—14. Ovule erect. Styles terminal, continuous. Achenia awned with the plumose persistent styles. Embryo erect. Evergreen, leafy, much branched shrubs; natives of Mexico. Leaves lobed, co-

riaceous. Stipules adherent. Flowers terminal, solitary, almost sessile; red, and very handsome. (*D. Don.*)

Spec. Char., &c. C. plicàta. Leaves wedge-shaped, oblong, pinnatifid, plaited. Ovaries 14. (*D. Don.*)

"A rigid, evergreen, decumbent, much-branched shrub, about 2 ft. high, and furnished with a dark-brown bark. Branches copiously clothed with stalked glands, scaly below from the remains of past leaves. Leaves cuneately oblong, pinnatifid, plicate, half an inch or more in length, dark green; minutely glandular and shining above; white and downy beneath with adpressed cottony pubescence. The nerves prominent. Lobes varying from 5 to 7, short, obtuse; the margins revolute and occasionally toothed. Petioles very short, slightly channelled above, sheathing at the base. Stipules adherent; the free apices subulate, hairy, green, shorter than the adherent portion. Flowers terminal, solitary; when in the bud state, exactly like those of *Rosa*. Peduncles scarcely a nail long, cylindrical, thickened towards the apex, copiously downy and glandular, and furnished at the base with a single, linear, acuminate, channeled, glandular bractea. Calyx turbinate, hollow, copiously downy and glandular; tube glabrous, shining, and green within; limb 5-parted, spreading; segments ovate, acuminate, entire. Petals 5, obovate, double the length of the calycine segments, of a rich lilac. Stamens 72, disposed in many series. Filaments capillary, glabrous, white, pink at the base. Anthers cordate, yellow, bilocular; the cells parallel, and opening lengthwise. Ovaria 14, free, arising from the centre of the torus, which is seated at the bottom of the calyx; oblong, clavate, copiously silky. Styles continuous, short. Stigmas terminal, simple, yellow, minutely papillose. Achenia about 8, turbinate, silky, crowned by the persistent feathery styles, which are 1½ in. long."

"We have seldom," Professor Don remarks, "had an opportunity of laying before our readers a subject of equal interest and beauty with the present, which is not only a new species, but an entirely new genus, to our gardens. It was raised by our zealous friend Mr. Thomas Blair, gardener to Mr. Clay, at Stamford Hill, from seeds picked from a specimen collected by Captain Colquhoun in the Uplands of Mexico. It promises to be sufficiently hardy to endure our winters in the open air; and, as it is an evergreen shrub, with a peculiar habit, and large showy blossoms resembling a small rose, it must be regarded as the most valuable addition made to our gardens for some years past. The genus was originally founded by us in the 14th volume of the *Linnæan Transactions*, upon another species, collected in the same country by Sessé and Mocino, and which is distinguished from the present one by its tripartite leaves with entire lobes. The genus is exactly intermediate between Dryas

and Púrsh*ia*; differing from the former in the quinary arrangement of the floral envelopes and definite ovaria; and from the latter, in the more numerous achenia, crowned by the persistent feathery styles." (*Swt. Brit. Fl.-Gard.*, Sept.)

Loàseæ.

2194. BLUMENBA'CH*IA* [Bot. mag. 3599.
*multifida *Hook.* multifid-*leaved* ☌ ○ or 1 jl.n Gsh. R. and Y Buenos Ayres 1826 S r.m.

This new Blumenbàch*ia* was first detected by the late Dr. Gillies at Buenos Ayres; and Sir W. J. Hooker noticed his specimens, preserved in his herbarium, under the name of B. insígnis, at t. 2865. of the *Botanical Magazine*. Since that discovery, Mr. Tweedie has gathered the same plant in the Pampas of Buenos Ayres, and seeds from him have been raised in the Glasgow Botanic garden. The plants flourish extremely well in the open border, and preserve all the characters of native dried ones; so that there can be little doubt of the species being distinct from B. insígnis. It is much the stronger growing plant of the two; and the leaves are much larger, 5-partite in a palmated manner; the middle lobe the longest, but all of them bipinnatifid, and wrinkled upon the surface. (*Bot. Mag.*, Sept.)

1478. MENTZE'L*IA*
*stipitàta *Dec.* stalked ♐ △ or 2 o Y Mexico 1835 C s.l Botanist, 34.

The present species is a native of Mexico, whence it was sent by Mr. Bates to the Liverpool Botanic Garden, and flowered in the green-house there. The flowers of all the species hitherto known are orange-coloured, and only expand when exposed to strong direct solar light, and continue in bloom only a few hours, but follow each other in rapid succession. They are devoid of perfume. The hairs of many species, and of Blumenbàch*ia* insígnis, secrete a pungent juice, much more potent than that of the nettle; and, as it is probable that this property is possessed by some mentzelias, it is prudent to avoid touching them carelessly. A mixture of sandy loam and peat seems to suit this plant best. Leaves alternate, exstipulate, petiolate, somewhat lobed or angular; pointed at the top, with large unequal teeth; both surfaces hairy; upper surface deep green; under, lighter. Flowers large, orange-yellow, solitary. (*Botanist*, Sept.)

*Lobeli*àceæ.

609. LOBE'L*IA* 5103 syphilítica
var. *hýbrida *Hook.* ♅ △ or 2 jn.o B ... ... C s.p Bot. mag. 3604.
Synonymes: L. speciósa, and L. Miller*i* Hort.

"There are few more beautiful hybrid vegetable productions than the present, which, though known in our gardens by a peculiar specific name, as if it were a legitimate individual, is now universally acknowledged to be the offspring of L. syphilítica on the one hand, and of some scarlet-flowering species (L. fúlgens, or cardinàlis, or splèndens) on the other. It is quite hardy, growing, in the open air, to the height of 2 or 3 feet;

blossoming through the summer months, and continuing in great beauty, till cut off by the autumnal frosts." (*Bot. Mag.*, Sept.)

Gesneràceæ.

1698. GE'SNER*A*
*Lindley*i Hook. Lindley's ♀ △ s.pl 2 jn.jl. S.Y Brazil 1825 C pl Bot. mag. 3602.
Synonyme: G. rùtila atrosanguínea *Lindl.*, Bot. Reg., t. 1279.

"This is a very striking plant, handsome in its foliage and in its flowers; which latter, though each is but of few days' duration, are succeeded by others in the same whorl for a considerable length of time. Leaves alternate, entire, or laciniate, rarely fistulous. Flowers in racemes, terminal or axillary, solitary. Pedicels bibracteate or naked. (*Bot. Mag.*, Sept.)

Convolvulàceæ.

492*a*. *PHARBI'TIS *Chois.* THE PHARBITIS. (From *pharbĕ*, colour; on account of the elegance and variety of colour in the flowers.)
*diversifòlia *Lindl.* 3-lobed ⚓ ⌂ pr 5 jn s B.R Mexico ?1836 R co Bot. reg. 1988.

A very pretty little half-hardy annual, about half the size of the common *C*onvólvulus màjor, of which it has very much the appearance. It differs, however, in constantly producing, at the latter part of the year, 3-lobed leaves, instead of entire ones; so that specimens of the same plant, collected at different seasons, would be thought essentially different. In the first stage of its growth, it is like P. híspida; at the next, it resembles P. *h*ederàcea, only that the calyx and inflorescence are distinct. Leaves cordate, acuminate. Flowers purple, with blood-coloured radii. (*Bot. Reg.*, Sept.)

Solanàceæ.

588*a*. GRABO'WSK*IA* Schlech. 4694 boerhaav*iæfòlia* (Crabówsk*ia* G. Don.)
Synonyme: *Lỳcium* boerhaav*iæfòlium* Linn.; Ehrèt*ia* *h*alimifòlia *L'Herit.*; *Lỳcium* hetero*phỳllum* *Murray.*

"A spiny scrambling shrub, with singular, fleshy, glaucous leaves, which give it a gray appearance, like *A*triplex *H*álimus. It is hardy enough, in the garden of the Horticultural Society, to live out of doors against a south wall, where it does not suffer at all in moderate winters: even in the last severe one, it was not much injured. Notwithstanding the dull aspect of both leaves and flowers, it forms a pleasing appearance when mixed with other and greener plants. It is a native of Brazil, where Sellow found it in the fields and woods of the southern provinces, a common shrub, growing from 6 ft. to 10 ft. high. It is also found in Peru. Leaves obovate, somewhat wedge-shaped at the base. Flowers opposite, solitary. Calyx fleshy, rather irregular, often laterally cleft. Corolla pale, lead-coloured, imbricate in æstivation; segments reflexed at the margin; veins green, reticulate at the base; 5 series of succulent articulated hairs occupying the neck, filaments, and tube of the corolla. Disk orange-yellow, fleshy, quickly absorbed by the growth of the ovary. Ovary fleshy, 4-celled; ovule solitary, spherical, ascendant in each cell; style simple, glabrous; stigma thickened,

green, bending downwards at both sides, scarcely 2-lobed." (*Bot. Reg.*, Sept.)

In the *Arboretum Britannicum*, p. 1274., a plant is stated to have stood out, for several years, in the Epsom Nursery, in the open garden; from which it appears to be as hardy as *Lycium* europæ`um.

Scrophulariàceæ.

1783. *MI'MULUS*
var. Harrison*iànus* Paxt.

"This showy hybrid is the result of impregnation between *M.* cardinàlis and *M. ròseus*, it having been obtained from seeds of the latter, the flowers of which were impregnated with the pollen of the former." Raised by Messrs. Low and Co. of the Clapton Nursery; and is, in all probability, quite hardy. (*Pax. Mag. of Bot.*, Sept.) This, and *M.* Hódson*i*, noticed p. 333., will probably form two valuable additions to the flower-garden, not only from the brilliancy of their colours; but because, by a little judicious cutting and watering the root in dry weather, they may be kept in flower all the summer. All the mimuluses will grow in any common soil, kept moist; but a sandy loam appears to suit them best.

Labiàtæ.

[1693. SCUTELLA`RIA 15290 alpìna
*sanguìnea *D. Don* red ♃ △ or ½ jn.o R ... 1835 D p.l Swt, Br. fl.-gard. 399.

"The plant is a hardy perennial, easily increased by division. Like the other varieties of alpìna, it continues in flower for a considerable time; and, from the size of its blossoms, and its dwarf habit, it is equally entitled with them to a place in the rockwork, or front of the flower border." There are plants in the Birmingham Botanic Garden. Stems procumbent, 3 in. to 5 in. long. Leaves ovate-oblong, crenated, ½ in. long. Flowers with large bracteas; the calyx and the bracteas both purple coloured. On the whole, this appears a most valuable addition to the flower-garden. The English name, skullcap, given to this genus, is a translation of the Latin word Cássida, the name applied to it by Tournefort. (*Swt. Br. Fl.-Gard.*, Sept.)

Primulàceæ.

451. PRI'MULA
*venùsta *Host* neat ♀ △ or ½ ap.my P Hungary 1833 D s.l Bot. reg. 1983.
Synonyme: P. Freyer*i* Hoppe.

Brought from the Botanic Garden, Vienna, by the Hon. W. F. Strangways. It is distinguished from P. aurícula by its smooth toothletted leaves, long-tubed calyx, and purple flowers. It is a native of the hilly parts of Hungary, and the crevices of rocks at Krain, near Idria. (*Bot. Reg.*, Aug.)

Orchidàceæ.

2554. EPIDE'NDRUM [D p.r.w Bot. mag. 3595.
*coriàceum *Parker MSS.* coriaceous-*leaved* ♐ ⍁ or 1 ... Gsh spotted with P Demerara ...

This plant was sent from Demerara, some years ago, by C. Parker, Esq., to the Liverpool Botanic Garden. It was at first

considered a variety of E. variegàtum *Bot. Mag.*, 3151.; but Sir W. J. Hooker thinks that it is distinct. (*Bot. Mag.*, Aug.)

2523. CYMBI'DIUM 22636 ensifòlium [reg. 1796.
*estriàtum *Lindl.* streakless ⅋ ⍓ fra 2½ jn.o G spotted with R China ... D l.p Bot.

"It is a very easy plant to cultivate, requiring nothing more than good green-house management, when it produces quantities of its slightly fragrant flowers in the spring. C. xiphiifòlium, with spotless pallid flowers, is very near this species, and is, perhaps, a variety." (*Bot. Reg.*, Aug.)

2530*a*. MONACHA'NTHUS discolor [mag. 3601.
var. *viridiflòra *Hook.* greenish-flowered ⅋ ⍓ or 1 au G Demerara ? 1835 D p.r.w Bot.

"Like so many of the epiphytal Orchídeæ, the present species is probably liable to considerable variation. Three plants of it, received at different times from Demerara, have all proved different in colour, and somewhat in the shape of the flowers. All are eminently singular, and deserving of cultivation." (*Bot. Mag.*, Sep.)

2580. CYPRIPE'DIUM [Bot. reg. 1991.
*purpuràtum *Lindl.* purple-*flowered* ☽ △ or ¾ n P Malayan Archipelago 1836 R s.p

Imported by Mr. Knight of King's Road, Chelsea. Its leaves are most like those of C. venústum; but are more oblong, and far less rigid, besides having a pallid colour. (*Bot. Reg.*, Sept.)

*MACROCHI'LUS *Knowles & Westcott.* MACROCHILUS. (From *makros*, long, and *cheilos*, a lip; in allusion to the unusual size of that part of the flower.) [cab. 45]
*Fryànus Knowles & Westcott. Fry's ⅋ ⍓ or 1 ... R. and G Brazil 1835 D p.r.w Flor.

This plant, which is perfectly new to this country, is a native of the Brazils, whence it was received, with many other rarities, by the Birmingham Botanical and Horticultural Society, in the autumn of 1835. The flower is strikingly handsome; the delicate cream-coloured sepals and petals presenting a fine contrast with the unusually large and beautifully marked labellum; and, upon the whole, it cannot fail to be regarded as an elegant and most valuable addition to our present stock of orchideaceous plants. It should be planted in rough sandy peat, mixed with a considerable portion of fine drainers, using, also, plenty of drainers at the bottom of the pot. The creeping stems, from which the pseudo-bulbs grow, ought to be entirely upon the surface. To facilitate increase, the stems may be cut half through (which will cause young shoots to be sent out), and, finally, cut through a month or more before dividing. (*Flor. Cab.*, Sept.)

*Amaryllid*àceæ.

975. HABRA'NTHUS 28907 Andersòni
*var. 5 texànus *Herb.* Texian ☿ ⍓ or 1 ... Y Texas 1834 O s.l Bot. mag. 3596.

Of this pretty Habránthus four varieties are noticed by Mr. Herbert in the *Botanic Register*, all, apparently, from Monte Video. "The plant," Sir W. J. Hooker observes, "must have an extended range. I possess specimens from Buenos Ayres, gathered by Tweedie; from Araucania, South Chili, by Mr. Reynolds; and Mr. Drummond sent the species from Texas

which Mr. Herbert has pronounced to be the same." (*Bot. Mag.*, Aug.)

Liliàceæ.

1017. *TU'LIPA* [reg. 1990.
*scabríscapa *Strangways* rough-stemmed ☿ △ or 2 ap.my R.Y Italy 1837 O r.m Bot.

The tulip, in its cultivated state, assumes appearances so unlike what are proper to it when wild, that it is only after long and patient investigation that garden varieties can be referred to their original species. Mr Strangways's residence at Florence, and the enquiries he was able to institute on this subject, have enabled him to investigate the genus successfully; and he has characterised four varieites of *T.* scabríscapa; viz. *T.* s. primulìna (Lady Hawarden's tulip), *T.* s. strangulàta, *T.* s. míxta, and *T.* s. Buonarrotti*àna*, which might be taken as the wild or original of the Van Toll, or Dutch sweet-scented tulip.

"These four tulips agree in the form of the flowers, which are elegantly cup-shaped; petals pointed, though less so than in *T.* O'culus sòlis; germen prismatic; stigma overhanging, not so large as in Gesneri*àna*; bulb smooth; scape rough, pubescent, or even hairy in strong plants, in which they differ from all other tulips. The petals of all have two strong furrows down the middle. Their leaves are glaucous, more or less undulated. They may possibly be the original stock of a tribe of second-rate garden tulips, neglected for the more showy varieties of *T.* Gesneri*àna*, which are met with in some of our gardens, and which betray their origin by their pointed petals, honey smell, and more or less pubescence on the stalk. Of these garden varieties, the Van Toll has been noticed. Those that are in cultivation at Florence are either the improved *T.* s. míxta, or a large very double sort of a mixture of white, pink, and green-pointed petals; short scape, smooth as far down as one or two green or party-coloured leaves, like bractæ, and rough below them, where the true scape begins; the upper smooth part with its leaves (detached petals) being, in fact, a monstrous elongated flower; also some English or Dutch pink or lilac, and white, with pointed petals, and stalks pubescent towards the base: that called the early Edgar is one of this set. In cottage gardens in the west of England are often seen two varieties that can only be referred to this class of tulips: one is exactly the strangulàta of Florence, with a perfectly smooth stalk; the other, a handsome variety of the same, having the black and yellow eye of *T.* O. sòlis, from which, however, it differs in every important character. These pointed-petaled tulips are frequently introduced into Italian paintings; and in the gallery Gualtieri at Orvieto are six oblong pictures of flowers, with the date 1614, in which many of these tulips are represented, besides other flowers, with the Italian names of that time." (*Bot. Reg.*, Sept.)

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Reid's new Hydraulic Engine (*fig.* 120., to a scale of 1½ in. to 1 ft.) — Our readers are aware of the important improvement made by Mr. Reid in the garden syringe, in 1819, by the introduction of the ball-valve, almost the only description of valve of which it may be said that it never goes out of repair; and that it will continue to act perfectly for a life-time, or till the materials of which it is composed decay. Mr. Reid has recently made a great additional improvement in this syringe, by which it is, in effect, turned into a garden engine; the difference between a common syringe and an engine being, that the latter forces out the water in one continuous stream. Mr. Reid's improvement consists in an arrangement by which a volume of air is compressed to an indefinite extent, by the working of the piston for forcing out the water, and without any sensible increase of labour to the operator. The manner in which this effected will be understood by the diagram *fig.* 121.; in which *a* is the piston and cylinder, as in the common syringe; *b*, a case in which this syringe, and also the discharge-tube (*c*), are enclosed; *d*, a small hole in the side of the discharge-tube; and *e*, a valve at the bottom of the discharge-tube: *f* is a valve to the suction-tube, by which the water is drawn up from a watering-pot, pail, or any other vessel. On the motion of drawing up the piston (*a*), the water enters by *f*; while, by pushing down the piston, the valve at *f* is closed, and the water is forced up the valve at *e*, into the discharge-tube; but, as some more water is forced into this tube than can pass through it, it escapes, by the small opening at *d*, into the vessel of air in which the working barrel and the discharge-tube are encased. As the air cannot escape from this vessel, it is necessarily compressed by the water which enters through the small opening at *d*; and, consequently, when the piston (*a*) is drawn up, and no longer forces the water up the discharge-tube (*c*), the action on that tube is kept up by the expansion of the compressed air which shuts the valve at *e*, and, consequently, forces the water along *c*.

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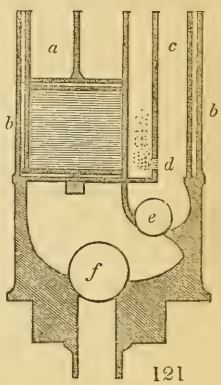

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A great beauty in this arrangement is, that no exertion of the operator is lost; nor can he exert himself without producing a corresponding result; for if, by rapid and powerful action he drives much water into the air-vessel, the greater degree in which the air is compressed will force the water with the more rapidity through the discharge-tube (*c*). In this way, it may be said that the superfluous exertion of the operator is not only saved, but turned to powerful account in producing a continuous stream. Mr. Reid states that this saving of labour is one third as compared with other engines of the kind.

Fig. 120. shows a general view of the engine, to a scale of 1½ in. to 1 ft.; by which it appears to be 3 ft. in length; and the outer casing is 2¼ in. in diameter. It weighs between 5 lb. and 6 lb.; it works with remarkable ease, and is

warranted by Mr. Reid to last a lifetime. By the addition of a flexible tube of 4 ft. in length, it becomes an excellent veterinary syringe, and, as such, will be nearly as useful to a farrier as to a gardener. Like Mr. Reid's common syringe, it is also valuable for aiding in the extinction of fires newly broken out: for which purpose we have recommended it in our *Suburban Gardener*, to be kept in every house, in a particular place, familiar to all the occupants of the house; and we keep one ourselves, at the back of our entrance door. — *Cond.*

Mr. Gowan's Mode of grafting the Vine. — After relating my success in the herbaceous grafting of *Abies* Smith*iana* (*Morínda*) on *Abies* excélsa, I cannot omit noticing the important discovery of grafting vines by Mr. Gowan, at Cadder House, by Glasgow. He is a most unassuming man; and, in my opinion, has not yet had that attention paid to him that his merit deserves: indeed, I was a little sceptical in my opinion of the matter; but, in March, 1836, I had a few kinds grafted, and two of them bore fruit the same season; and that year, on application to the Horticultural Society of London, a few cuttings of vines were sent to this place, and grafted at the end of March. Some of the shoots are now 10 ft. long, and will be in fine condition for bearing next year. Is this not of importance in old established vineries, where any new sorts are wanted? The success in grafting vines depends on the time, which appears to be when the young shoots of the stocks have advanced from 15 in. to 18 in. long; but, as Mr. Gowan has given a particular description of his method (p. 117.), it would be improper for me to advance any thing more upon the subject. — *James Smith. Hopetoun House, July* 1. 1837.

Heraclèum perénne. — The Scotch newspapers, particularly those of Ayr, are directing public attention to a new species of *Heraclèum*, or cow-parsnep, introduced from Siberia, by our amiable and intelligent friend Mr. Smith of the Ayr Nursery. "Its qualities for feeding, especially dairy stock, have been proved by many respectable individuals to be very superior; and its bulk of herbage far exceeds that of any vegetable yet known in Britain. It is very hardy, and from 4 to 5 weeks earlier than any other plant in cultivation in this country; which alone adds to its value beyond price. Such an acquisition of early feeding in backward springs will prove of incalculable benefit, as it grows freely upon any soil, and is easily managed. Mr. Smith sows it in drills, and treats it in the same manner as lucerne. It is a true perennial, and the older the plant, the more vigorous is its growth, and the greater the bulk of vegetable matter which it produces." (*Ayr Advertiser.*)

Rhubarb Jelly. — At the Caledonian Horticultural Society's show, held on July 12., a new and interesting article of confectionary was exhibited in the Council Room, and tasted by many of the company. This consisted of jelly and jam made from the tender leaf-stalks of a peculiar variety of red rhubarb, cultivated in the Society's Garden. The flavour was considered equal, if not superior, to that of currant jelly, and it may be prepared in the spring, three months before currants are ripe. The Society's honorary silver medal was unanimously voted to Mr. James Macnab, who has the sole merit of introducing this novelty. (*Scotsman*, July 19.)

Rhubarb Wine. — The leaf-stalks of the giant rhubarb, cut into pieces as if for tarts, and bruised with a wooden mallet to express the juice, will make a delicious wine, quite equal to green gooseberry, and very closely resembling champagne. — *J. W. L.*

Keeping of Filberts. — This being the nut season, I may as well inform you that a dish of filberts, the growth of 1835, was exhibited in our garden, on the 2d of this month, by J. Johnson, Esq., of this town. His experiment was most successful, for the kernels of most of them were sound, and of good quality. A prize was awarded to Mr. Johnson on the occasion. The filberts, when perfectly ripe and dry, are packed, with their husks on, in earthen jars; a layer of salt is spread over the surface; a piece of brown paper is fastened on to exclude the air; and they are kept in a dry cool cellar. The Turkish method of preserving filberts (*Gard. Mag.*, iv. p. 307.) is somewhat akin to the above. — *A. Campbell. Manchester, August* 15. 1837.

The Wood of the Phillyrea is, perhaps, next to box, the best for wood-engraving. I have used it for this purpose with entire success, with the advantage that blocks of large size can be had of it, without joining. It works quite as well as box; and, for hardness and durability in printing, seems to be but little inferior. — *Samuel Hassell. Littleton, near Somerton, August* 1. 1837.

Fibre of the Pine-apple Plant. — At an evening meeting at the Gallery of Practical Science, M. F. B. Zincke explained the advantages that would be derived from the use of the fibre obtained from the leaf of the pine-apple plant in the textile fabrics of this country. The fineness and strength of the fibre was shown by experiment, and specimens of it prepared, both plain and dyed of various colours. M. Zincke also advocated its cultivation, as giving a new value to West India property, which, he said, was now suffering, and was likely to suffer still more, from the dislike evinced by the emancipated negroes to engage on any terms in the sugar cultivation. M. Zincke explained that the cultivation of the pine-apple plant required but little labour or expense; that it was but little affected by the casualties of weather, which so often prove so detrimental to other crops; that the machinery necessary for preparing the fibre from the plant was of the simplest kind; that every part of the process could be managed either by Europeans or negroes; and he calculated that it might be delivered in England, exclusive of profit or duty, at 4d. per pound. (*Athenæum*, June 17. 1837.) The foregoing paragraph being copied into *L'Echo du Monde Savant*, a French periodical, has had its meaning quite altered, from translating pine-apple plant by the term *Conifères*.

To render Fuci and Lichens edible. — The Royal Society of Arts for Scotland, among their prizes for 1837-8, have offered the silver medal, value five sovereigns, "for a mode of depriving the mucilage of fuci and lichens of its disagreeable taste and odour." (See *Scotsman*, August 9. 1837.)

Plants rich in Potash can never be petrified. — Hence, only trees and shrubs occur in a fossil state, and never herbaceous plants. Shrubs occur more rarely than trees; because, though they contain less potash than herbaceous plants, yet, when calcined, they yield more than trees. (*Göppert on Fossil Plants, and on the Process of Petrifaction*, as translated in *Jameson's Journal*, July 23. 1837.)

Art. II. *Foreign Notices.*

FRANCE.

Paris, July 4. 1837.— I send you herewith a *Monograph on the Genus Camellia*, by my friend the Abbé Berlèze, under secretary to the Horticultural Society of Paris; and I think you will agree with me, that this little work is one of the best that has been published for guiding both amateurs and gardeners as to the choice and culture of that beautiful shrub. Secondly, I send you three polemical letters of mine, relating to the encouragement given in this country to agriculture. It was in consequence of these letters, and another addressed to the king, and which was sent to the ministers, that the Minister of Public Works decided on offering a prize for the best elementary works on agriculture, for the use of children educated in the public schools in the French provinces. I also send a chapter on the parterres in old French gardens, extracted from an *Encyclopædia of Gardening*, which some of my friends and myself have undertaken to publish in France, in imitation of your English one: but we are not here seconded, as you are, by the rich proprietors. The taste for elegant horticulture is absolutely extinct in France; and, as a proof of this, there is not one single stove or green-house in or near Paris that deserves the name, except those of M. Rothschild. There is no knowledge here of the beautiful plants necessary to form the collection of an amateur; and to this is joined a parsimonious spirit, which thinks every thing "too dear." The Parisians prefer using their fuel to cook palatable dishes, rather than to keep rare plants; and, when the price of any one of these exceeds a crown, they will not even look at it. — *Soulange-Bodin.*

Summary of Subjects proposed for Prizes by the Agricultural Society of France at their Meeting in July, 1837.— § i. *To be decided in* 1838. For the introduction of organised and mineral manures. For the translation of useful works on agriculture, written in foreign languages. For biographical notices of persons who have rendered benefits to agriculture. For works, essays, or practical observations relative to veterinary surgery. For essays on practical irrigation, and information respecting the statistics of irrigation in France. For information respecting the cultivation of apples and pears for perry and cider, in France. For an essay on the uses which may be made of the dead bodies of animals, killed by accident, or which have died of diseases in the field. For a hand threshing-machine, which, without breaking the straw more than the flail, shall separate the corn and winnow it with the greatest economy. For the best method of forming Artesian wells. For a rasp for preparing potatoes for making flour and starch. For a system of a rotation of crops without a fallow. For plantations of mulberries, and for rearing silkworms, in those departments of France into which they have not yet been introduced. For the extraction of sugar from the beet-root, in small establishments. For the discovery of a simple method, which might be practised by small cultivators, for preserving corn from insects ; for stopping the ravages of insects when the corn is already attacked ; and for good observations on the natural history of the insects which attack corn. For the draining of wet clayey soils. For the composition of elementary works on agriculture, for the use of children in the national schools.

§ ii. *To be decided in* 1839. For the imitating, in France, of the best Dutch, Cheshire, and Parmesan cheeses. For the best method of preventing or curing the diseases of silkworms. For observations, founded on experience, on the best method of harnessing oxen.

§ iii. *To be decided in* 1845. For plantations of cork trees on sandy or bad soil, in the south of France, made before the end of 1838.

§ iv. *To be decided in* 1848. For the propagation of good kinds of fruit trees by seeds.

§ v. *To be decided in* 1850. For plantations of any of the three following kinds of oak, all of which may be employed in dyeing : — 1. *Quércus tinctòria*, the quercitron, or yellow oak, a native of North America (see *Arb. Brit.*, p. 1884.) 2. *Q.* infectòria, the gall-nut oak, a native of Asia Minor (see *Arb. Brit.*, p. 1928.); and, 3. *Q. Æ'gilops*, the Valonia oak, indigenous in Greece. (See *Arb. Brit.*, p. 1861.)

Insects destructive to the Vine. — The mayor of the commune of Argenteuil has written to the Academy of Sciences on the subject of an insect which, for many years, has devastated the vines in that commune. This insect, or maggot, was observed in the year 1783, and disappeared some years afterwards. Twenty-four years later, it reappeared, and caused like ravages during from six to ten years. It has recently returned, and increased so fast, that at present it occupies about three fifths of this territory, leaving complete desolation behind it. This insect, after having gnawed the leaves, and injured many of the grapes, envelopes itself in one of the leaves, and there undergoes its metamorphosis. The damage done by it this year cannot be estimated at less than from 500 to 600 francs. The larva changes into a moth in July, and deposits its eggs on the vines in September, which come forth in the May of the following year. MM. Duméril and A. Saint Hilaire, being appointed by the Academy to verify the damages stated in the letter of the mayor of Argenteuil, visited this locality, and have made a report of their examination. For a considerable space, they saw all the vines stripped of their leaves, and dried up. The greater part of this destruction is caused by a well-known Pyràlis, which, in the caterpillar state, rolls up and twists the leaves, and causes them to wither. M. Duméril placed before the Academy this insect in the state of larva, chrysalis, and moth, as well as the eggs : but two other insects have also attacked the grapes, and contributed to the destruction of the vine in this place. (*L'E'cho du Monde Savant*, Aug. 2. 1837.)

Acclimatising Plants at Hières, in the South of France.— M. Rantonnet, hor-

ticulturist at Hières, has published some curious observations on the intensity of the last winter's frost, and on the damage which it has caused in Provence. The frost commenced December 26. The thermometer already indicated 2° below zero; on the 29th, it fell to 5°; and on the 31st, to $4\frac{1}{2}$°: there was then a little snow, which lasted three days. The frost diminished to the 1st of January; and, from the 6th to the 10th, the weather set in fair, and continued so until the 23d of March. The frost then returned, and there was tolerably thick ice. On the 10th of April, there was snow still seen on the mountains, at three leagues from Hières. At Hières, the lemon trees, the bergamottes, the citron tree, the great lemon, the mellarossa, the lumies, limes, &c., all suffered so much, that it was necessary to cut them down to the roots. Among the exotics which perished, are noticed the Echìnus cándicans, *Clè*thra arbòrea, Vísn*ea Mocanèra*, *Ac*àcia lophántha, *C*ássia tomentòsa, *Ph*lòmis Leonùrus, Eucalýptus diversifòlia and oblìqua, *So*lànum *b*etàceum, Gré*wia* orientàlis, *L*ìnum trígynum, Cinerària *p*latanifòlia, *Fi*cus elástica, and all the date trees from the age of three to six years. The Erythrìna Crísta-gálli also died, as well as the climbing plants trained against the walls; such as the *Técoma* capénsis, *J*asmìnum grandiflòrum and azóricum, Cob*æ'a* scándens, *Ph*asèolus *Caracálla*, and *D*ólichos lignòsus. The Casuarìna *e*quisetifòlia, Melaleùca linarifòlia, *N*èrium spléndens and álbum, and *Sch*ìnus *Mólle*, scarcely suffered at all; but the young plants of these latter mentioned were completely killed.

The bamboo, the *Ac*àcia farnesiàna, Pittósporum nànum, *Sá*lvia formòea and mexicàna, *So*lànum auriculàtum, the guava (*Ps*ídium pyríferum), and Brugmáns*ia* suavèolens, nearly all died. As for *Ac*àcia latifòlia, *Hi*bíscus mutábilis, Lantàna Séllow*i*, *C*ìtrus bizzària and *m*yrtifòlia, they scarcely suffered at all.

The tubers of the Jerusalem artichoke, which are harvested generally in January and February, were frozen. Usually, they sell at 10 or 15 centimes the dozen; but there are so few this year, that they are 1 franc 80 centimes the dozen.

The following plants escaped without suffering any injury:— Menispérmum *l*aurifòlium, *C*ístus créticus, Búddl*ea s*alvifòlia, *C*eanòthus cærùleus, *Vi*búrnum sinénse, *C*ássia corymbòsa, *D*áphne Delphín*ii*, Hàke*a* austràlis, *Ac*àcia floribúnda, *Yúcca a*loïfòlia and gloriòsa, *Mý*rtus commùnis flòre plèno, Tarentìna variegàta, *Nandìna* doméstica, Eriobótrya japónica, Corræ*'a* álba, *O'*lea frà*g*rans, *Ph*órmium tènax, *C*onvólvulus oleæfòlius, *C. C*neòrum, and Andropògon squarròsum, cultivated in the open field, which, on the 6th of April, were visibly growing.

At Toulon, the winter was more destructive than at Hières. Many vegetables, which resisted the cold at Hières, died in the Botanic Garden of the former town.

At Draguignan, Trans-Brignolles, places situated fifteen leagues from the sea, the thermometer fell to 70°, and some olive trees were damaged: but this tree can support 8° of cold.

To conclude, at Nice they had snow for eight days. The oranges were frozen upon the trees; but the trees themselves did not suffer: only some feet of lemons, bergamottes, and lumies (kinds of *C*ìtrus), were a little hurt. M. Rantonnet saw there, in the governor's garden, on the 5th of January, a cobœa covered with fruit and flowers. (*L'E'cho du Monde Savant.*)

Paris, April 9. — My journey on the Continent having taken up more time than I anticipated, I shall be unable to pass through England on my return home, as I intended when I left London. I went from Holland (by the Rhine), through Prussia and Baden, to Geneva, and found Switzerland much better cultivated than I expected. The peculiarity, and, I may say, the excellency, of the agriculture in that country consists in good ploughing, great care, judicious application of manure on the crops, and irrigation of meadows and pasture grounds. I found France, also, much better cultivated than I had a right to expect, from the article I read in a late number of the *Edinburgh*

Review. The wheat especially in France, looks uncommonly fine. It appears to me that France is emphatically a wheat country. Their mode of ploughing on the Continent, as far as I have travelled, seems to me, however, to be any thing but economical: it is the same as that I saw in some parts of England; that is, a wheel plough, and from three to five horses *en suite*. But the Swiss and French farmers turn up a very good furrow; the plough itself (aside from its ridiculous appendages) being well adapted to its purpose. I really wish it were proper for me to notice this ridiculous part of European husbandry in a way it deserves. It is possible I may give it a passing notice on my return to the United States. I regret exceedingly that I must forego the pleasure of visiting London again, and spending a day or two with you. — *A. D. Spoor.*

Nepénthes distillatòria. — A plant in a stove at Montmartre was observed to have one of the pitchers half full of water, which the gardener, having tasted, found sweet, with the flavour of honey. A statement of the fact was sent to the Paris Horticultural Society, in August, 1837. (*L'E'cho du Monde Savant*, Aug. 5. 1837.)

GERMANY.

M. Tischke, son of the court gardener to the King of Saxony at the Japan Palace, Dresden, is now in this country, and has already made a general tour, including Scotland and Ireland, with the great advantage of recommendations to the nobility and gentry, procured from the ambassador of his country, resident in London. M. Tischke, like M. C. Rauch, M. F. Rauch, M. Rosenthal, M. Antoine, and other German gardeners, lately or now in England, has not only taken time to see all our best gardens, but has taken pains to acquire a competent knowledge of the English language; so that when he returns, by means of English books, he will always be able to keep himself *au fait* at what is going forward in the gardening world in Britain.

M. Wolf, the curator of the Botanic Garden of the University of Wurtzburg, one of the most scientific gardeners, as Dr. Martius informs us, of the south of Germany, has lately spent upwards of a month in this country, and visited, in company with M. Antoine of Vienna, all the principal garden establishments in the neighbourhood of London, Edinburgh, Glasgow, and Dublin, as well as the botanic and horticultural gardens at Birmingham, Sheffield, Manchester, Liverpool, and the gardens at Eaton Hall, Chatsworth, Woburn Abbey, and various others. He returns home through France and Belgium; and we hope to hear from him, from time to time, with the gardening news of his country.

M. Sckell, the director-general of gardens to the King of Bavaria, has lately published a description of the royal gardens and pleasure-grounds under his direction, accompanied by a beautifully lithographed plan of the gardens of Nymphenburg, with all the latest improvements.

Counsellor Von Hazzi, who may be considered the father of modern agriculture in Bavaria, who was in England in the summer of 1836, has lately published his Tour in this country, in two thin 8vo volumes. M. Hazzi is a highly enlightened and benevolent man, and of the most unwearied activity in the publication of works calculated to improve the agriculture and domestic economy of his country. — *Cond.*

Koller's History of Insects injurious to Cultivators, and to the Proprietors of Forests and Plantations. — I rejoice at being able to send you a book which will be the more interesting to you, and other horticulturists, as it contains an elaborate account of insects injurious to vegetation, the injury they commit, and the most practicable modes of destroying them; for which a wish has been expressed in several numbers of your Magazine. This work is the joint labour of three gentlemen, who have great practical knowledge, and particularly M. Schmidberger, a priest of St. Florian, near Linz, who is one of the first pomologists in Austria, and perhaps in Germany. Had I a little

more time than I have at present, I should be most happy to communicate what little knowledge I possess on this subject; and also to send you specimens of those insects which have been so injurious to our gardens round Vienna this spring. The *C*urcùlio pỳri, *C.* pomórum, and Póntia cratæ'gi, appeared in such numbers, and destroyed every bud so immediately after its appearance, that, until the middle of May, the trees were without bud or leaf. Even now these butterflies are so plentiful, that there is a bad prospect for next year, although we searched for them in all their various metamorphoses, and still catch thousands of them in the mornings and evenings, when they are crowded together on different flowering plants, especially on *Valeriàna* rùbra, *D*elphínium Ajàcis, and *P*hiladélphus sp. I intend making a collection of all these injurious insects, and putting them into a frame and glass, for the inspection of those who may be desirous of knowing them. This will enable young gardeners to know them at once, and at any time; and, by reading their different distinctive qualities, any one may easily remember their forms; which would not be the case, if a person were left to observe them in their different states and seasons alone; therefore, I would recommend such a collection in every garden. — *C. Rauch. Rennweg, near Vienna, July*, 1837.

The very interesting and valuable work above referred to by M. Rauch was published by the Agricultural Society of Vienna, who have also sent us a copy of it. It is now being translated for us, and will very shortly be published, in as cheap and convenient a form as possible, for the use of young gardeners. M. Rauch's idea of forming collections of destructive insects, in glazed cases, for the use of gardeners, is excellent, and we hope to see it adopted by many of our readers. — *Cond.*

HOLLAND.

Prizes offered by the Academy of Sciences at Haarlem, which held its eighty-fifth annual meeting on the 20th of May last. The Academy's gold medal, and a gratuity of 150 florins (12*l.* 16*s.* 3*d.*), were awarded to Dr. C. F. Gaertner of Calew in Wurtemberg, for a Memoir in German, on hybrid plants, obtained by the fecundation of certain species with the pollen of others.

The Academy proposes the following Questions to be answered before January 1. 1839: —What are the different species of marine animals which destroy piles, and other wooden structures, by perforating them? According to certain botanists, some algæ, of simple structure, if placed in favourable circumstances, will develope themselves, and be changed into vegetables quite different, and belonging to genera much higher in the scale of organisation, though these same algæ, if not in favourable circumstances, would be fecundated and reproduce their primitive forms. The Academy is desirous that these observations should be extended to other vegetables, which have not yet been examined under this point of view; and that the truth or falsity of this transition of one organised body into another be proved by exact descriptions and detailed figures. It has often been observed that some plants, in certain cases, give out a phosphorescent light, such as Tropæ'olum, Caléndula, *L*ílium bulbíferum, *Tagètes*, *E*uphórbia phosphòrea, Rhizomórpha, &c. The Academy wishes that, from researches made on purpose, this phenomenon may be explained; that it may be determined how much of what has been said on this subject is to be admitted as true; under what circumstances the phenomenon takes place; and what is the cause?

The following Questions were last Year proposed by the Academy, to be answered before January 1. 1838: — How is wood formed? Does it take its origin immediately from the sap, or from the cambium under the bark; or is it formed by the vessels which descend from the buds and the leaves, as the observations of M. Du Petit Thouars, and of M. Giron de Buzareingues, seem to prove? What application can be made of a knowledge of the true manner in which wood is formed, to the culture of useful trees? The Academy desires, 1st, an explanation, illustrated by figures, of the metamorphoses of at least fifty species of coleopterous insects, the metamorphoses and economy of which

are not yet known or described; 2dly, a methodical arrangement of coleopterous insects, founded upon the metamorphosis of the structure of the larvæ and chrysalides; 3dly, instructions, based on a knowledge of the metamorphoses, for preventing the too great increase of these noxious insects. How much has been proved, by experience, with respect to the utility of a circular incision, in form of a ring, made in the bark of trees, for the purpose of augmenting their fertility? How far can this manner of augmenting the produce of fruits be explained, conformably to the actual state of vegetable physiology; and what rules does this explanation furnish for effecting the process, without endangering the trees, or running the risk of losing them? What is the nature of *chlorophylle* (*phyllochlore*, *chromule*) in vegetables? What is its form and composition; and in what character does it differ from other vegetable matters? Is it different according to the kind of plant; and what constitutes this difference? What are the circumstances by which, during vegetation, it is produced, or changed, or modified, in plants?

The prize for each of these questions is a gold medal, value 150 florins, and a gratuity of 150 florins, when the answer shall be deemed worthy of it. The answers, written in Dutch, French, English, Latin, or German, are to be addressed to M. Van Marum, the secretary to the Academy. (*L'E'cho du Monde Savant*, July 15. 1837.)

DENMARK.

M. Petersen, gardener to the King of Denmark at Rosenburg, who made a tour through England, and part of Scotland, in the year 1831, was in this country during great part of the month of July last, and has returned home through France, Belgium, and Germany. M. Petersen having spent five or six years in this country, before he was appointed court gardener to his sovereign, not only acquired a thorough knowledge of all the newest gardening practices in the neighbourhood of London, but such a knowledge of the English language as enables him, while in his native country, to keep pace with the progress of improvement in England by means of English books. When M. Petersen returned to Denmark in the year 1827 (see *Gard. Mag.*, Vol. III. p. 346.; and Vol. IV. p. 274.), gardening was in such a backward state, that an inhabitant of Britain now hardly credits the facts stated by M. Petersen, at that time, in the *Gardener's Magazine*; viz. that tart rhubarb was not known there as a culinary vegetable; that not a single pine-apple had been ripened on the 3d of September, 1827, but some were expected to be ready by about the middle of that month. The first melon was cut on August 30., and the first grapes only a few days sooner; mushrooms and sea-kale were not at all cultivated; most of the New Holland plants were unknown, even in the botanic gardens; and the only new North American annual grown there at that time was the Calliópsis tinctòria. Such was the state of gardening of Denmark in the year 1827. In the course of 10 years, things have been entirely changed. Every culinary vegetable grown in English gardens is now produced in the royal kitchen-gardens at Copenhagen; many of the best varieties of hardy fruit trees have been not only introduced in the royal gardens, but even propagated in the public nurseries; almost all the fine herbaceous plants, annuals, and perennials, sent home by Douglas, have been introduced, and some of them are beginning to appear in the gardens of merchants. Pine-apples are cut in the royal gardens every month in the year; and some of them of such a size (M. Petersen being a disciple of the late Mr. Shenan, and keeping his plants, as all plants without buds ought to be kept, in a continually growing state), that we are afraid to state the weight; and, finally, a horticultural society has been established at Copenhagen. All this has been effected through the agency of M. Petersen, than whom we do not know a single individual, in any country, who (without the advantages of birth, rank, or fortune, and simply on account of his holding a public situation, and being a lover of his country, and enthusiastically attached to gardening) has effected so very remarkable a change in so short a time. The greatest reward which such a man as M.

Petersen can receive is, doubtless, the consciousness of having done so much good: but we trust his royal master will, by some means, be rendered aware of the very extraordinary merits of M. Petersen; and how much he, in common with his subjects, is indebted to him for the introduction of what will eventually prove of so much real good to the country. There is no one who does not benefit from the introduction of new and improved culinary vegetables and fruits, from the peasant to the prince; or any garden, whether that of a cottage or a palace, that will not be increased in beauty by new flowers. Besides this, there is a moral influence in gardening improvements, of far greater importance than the mere physical enjoyments that they afford. A taste for peaceful occupations is created; reflections on the works of nature are induced; man begins to enquire and to read; he becomes humanised, and so far cultivated as to look upon his fellow creatures in other countries as his brethren; and, as a consequence of this, he will soon learn to loathe that scourge of the human race, war. — *Cond.*

NORTH AMERICA.

Carouie, near Quebec, the seat of William Atkinson, Esq., is mentioned in Vol. IX. p. 161., by our valued correspondent Counsellor Hart of Montreal. The proprietor, Mr. Atkinson, is now in England, after having made the tour of France, Italy, and Germany, and collected every where plants, seeds, sculptures, pictures, books, and other objects for enriching and ornamenting his beautiful seat. He describes Carouie as situated on a piece of table land on the top of a precipice 200 ft. high, and flanked by a wooded mountain range. From the windows of the balcony of the principal front of the house, the shipping in the harbour of Quebec is distinctly seen. A part of the grounds, called Spencer Wood, was occupied by the troops under General Wolfe when he attacked the town. The trees in the park, from what Mr. Atkinson stated to us, appear to be chiefly the white and red oak, and the hemlock and white spruce. The house is built of hemlock spruce; and the walls are so constructed as to admit of a free circulation of air from the bottom of the masonry to the eaves. Though built upwards of a century ago, the interior of the walls is as fresh as if they were newly put up. It seems the hemlock spruce begins to rot at the centre of the trunk; and, to prevent this, the trees were sawn up the middle, so as to expose the centre to the air. After placing one tree on another, to the height of the wall, in the usual manner, both the inside and the outside were battened with pieces of quartering from 1 in. to 6 in. in thickness; and to these the weather-boarding outside, and the laths for plastering inside, or the wainscoting, when that mode is employed, are nailed in the usual manner. A concealed opening is left under the lower weather-board, and at the eaves of the roof; in consequence of which, there is a constant circulation of air between the outside weather-boarding and the inside wainscoting, or plastering. Mr. Atkinson, from whom we hope to hear frequently, has an excellent Scotch gardener, Mr. Melville, who, we trust, will be induced by his master to become a regular correspondent. The principal botanist in the neighbourhood of Quebec, Mr. Atkinson informs us, is Mrs. Shepherd. Mr. Atkinson's kitchen-garden is 4 acres in extent, and contains a range of glass 300 ft. long. The dwelling-house, a beautiful lithographic view of which, and the surrounding scenery, was presented to us by Mr. Atkinson, is connected with a splendid conservatory.

Shell-bark Hickory Nuts and the Black Walnut. — You did not mention the receipt of the large hickory nuts I sent you in the summer of 1835; and, therefore, I send now a few real shell-bark hickory nuts, which are double the size of any I ever saw before. These grew in New Jersey. The hickory nuts I purchased in the Pittsburg market, in September, 1834. The shell-barks, large or small, are delicious; whereas the meat of the black walnut, as you remark in the *Arboretum*, is "scarcely eatable." The reason is, that the kernel abounds with oil of a strong taste. I think that the remarks you have quoted (p. 1429.) from Michaux, of the black dye from the walnut husks, and of the oil obtained

from the kernels, refers to the *Jùglans nìgra* solely. In Pennsylvania, many mills are employed in crushing these nuts to make oil for painters, who use it for mixing up with paint for inside house work. I know, also, that the husks are extensively used for dyeing brown and black, by the German farmers, and others in the interior, who think it more economical to make their clothing from their own wool than to purchase foreign cloth.

The Washington Chestnut. — Having engaged, last autumn, a plant, from the tenant of Belmont (the former seat of Judge Peters), of the sweet chestnut the growth of the tree the nut of which was planted by President Washington, I went, a few days since, and brought it away, with another growing beside it. The man assured me that he found two nuts under the original tree, in June last, in a state of vegetation, and planted them in a safe place; and that from these came the plants I purchased. I must keep them until a vessel offers direct for London from this port. Washington planted the nut the day after his period of service as President expired; viz. March, 1797. He attended the inauguration of President Adams, his successor, and dined the same day with Judge Peters.

The Silk-Grower's Manual. — I also send the *Silk Manual*, published by Congress, in 1828, which I prepared for Mr. Rush, then Secretary of the Treasury, who was charged with the duty of procuring one. I thought I had previously sent it; but I suppose I did not, as I find that no notice is taken of the many facts it contains on the genus *Mòrus*, in Nos. 30. and 31. of the *Arboretum*; or of the culture of silk in this country while colonies of England.

Maple Sugar. — I send, also, some maple sugar, made from the sugar maple of which tree there are whole forests in the United States, though it is not "cultivated" there, as was said by Dr. Kidd in his *Bridgewater Treatise.* — *James Mease. Philadelphia, April* 17. 1837.

AUSTRALIA.

Elizabeth Bay, near Sydney, the residence of Alexander M'Leay, Esq., for many years secretary to the Linnæan Society, is described in a work recently published at Sydney, by the late Mr. Shepherd, a landscape-gardener and nurseryman there, as one of the finest places he has seen either at home or abroad. Mr. Lawrence, a surgeon, who has just returned from Sydney, speaks of it to us in raptures. We hope, in some future Number, to be able to give a plan and views of Mr. M'Leay's residence; and, what will be particularly interesting to European readers, a catalogue of the trees, shrubs, and plants, including even grasses, which form its verdant scenery. We regret to observe, that Mr. M'Leay is no longer Government Secretary; but, as he appears to have lost the office in consequence of some misconception of the Governor at Sydney, we have no doubt that the government at home will speedily restore it to him, should he be inclined to remain in Australia. We are gratified by observing it stated in the letters which passed between the government and Mr. M'Leay on this subject, and which are printed for circulation among the friends of the latter, that he enjoys as good health as ever he did at any period of his life. To those who know the extraordinary activity, both of body and mind, of Mr. M'Leay, while he was in this country, and his now advanced age, this will be considered as no small recommendation of the climate of Sydney — *Cond.*

Art. III. *Domestic Notices.*

ENGLAND.

M. Eugène Melinon, who has been two years in this country, chiefly under Mr. Paxton, in the gardens at Chatsworth, has lately made a tour in the North, and been with Mr. M'Nab, and Mr. Stewart Murray. He will shortly return to the Paris garden; and, as he understands English thoroughly, will have great advantages there.

MM. Le Roy, sons of the nurseryman of that name at Angers, are now

in this country on a working tour, to acquire gardening information, and the language.

The Gardens of Buckingham Palace are undergoing great improvements and alterations by direction of Her Majesty. Upwards of 200 workmen are employed in diversifying and planting the grounds from the rear of the palace to the triumphal arch entrance at the top of Grosvenor Place. (*Newsp.*) It would indeed be contrary to nature, if an amiable and enlightened young woman were not fond of flowers: and attachment to gardening follows as a matter of course. We trust that, under Her Majesty's auspices, a general reform will be commenced in the royal parks and gardens, and that in these will be included the substitution of an open iron railway for the present unsightly wall which forms the northern boundary to Kensington Gardens. This wall is a very great public nuisance, from a little way to the west of the Victoria Gate, Bayswater, all the way to Silver Street, Kensington Gravel Pits. We trust that it, and also the present kitchen-garden attached to Kensington Palace, will not be lost sight of by the Commissioners of Woods and Forests. The kitchen-garden ought, undoubtedly, to be joined to the pleasure-ground; and as to the forcing-ground, as there is no part of the royal family would ever think of walking into it, we would have that and the adjoining barracks thrown into the gardens also. It is now just as easy to purchase pine-apples and melons to any extent which the royal family, or any other, might want, from the London shops, as it is to purchase apples or oranges: witness the numbers that are produced on the occasion of any public dinner. Mr. John Aiton, the present kitchen-gardener at Kensington, would, of course, receive a compensation for the loss of his situation in the event of our wishes being realised.

Kew Gardens. — The illiberal system established at Kew Gardens by Sir Joseph Banks, whereby the rare plants collected there were hoarded with the most niggard jealousy, and kept as much as possible out of the sight of any enquirer, led, in the first instance, to a feeling of satisfaction whenever it was known that the garden had been plundered, and some of its hidden treasures brought into circulation; and the indifference with which such thefts were regarded, if they were not actually winked at, by cultivators, led to such great laxity of conduct, that, until the practice was stopped by a prosecution, every private collection became exposed to like depredations; and the falsehoods that were told to cover the theft occasioned a great deal of confusion concerning the native habitation of plants introduced at that period. It was the narrow-minded doctrine of Sir Joseph Banks, that he could only render the king's collection superior to others by monopolising its contents; and by so doing he rendered it hateful and contemptible; whereas, if he had freely given and freely received, and made its contents easily accessible to those who were interested in them, it would have been a pleasure and a pride to the nation. It is now near twenty years since I have visited that odious and useless establishment. Formerly, I went there often, but always in vain; for, if I enquired for any rare plants which I had reason to believe were in the collection, except those which, from their size, could not be concealed, my conductor always denied any knowledge of them; and, if I asked whether I could speak to a person better acquainted with the plants, I was told that I could obtain no further information. The multitude of rare plants that have flourished and perished there unobserved I believe to be very great. I owe no thanks to that establishment, but for the mere permission to walk straight forward through the houses. I must do Mr. Salisbury the justice to say, that he repeatedly remonstrated with Sir Joseph Banks in vain on the subject. (*Herbert's Amaryllidaceæ*, p. 247.)

When I spoke (p. 247.) of the evil consequences which flowed from the bad system pursued there, tending to loosen the ties of morality, and to create a feeling of satisfaction when it was known that cuttings had been stolen from the large plants hoarded there, by which the public were enriched without any perceivable loss to the collection, I should, perhaps, have stated

for fear of misconstruction, that, far from justifying, I much lamented such a feeling; and I observe that I have incautiously admitted a stronger expression concerning the unpopularity of the principle on which that garden has been conducted than I should wish to have used. (*Herb. Amar.* p. 410.)

A Zoological Institution, Museum, and Garden, for the County of Kent, is, we rejoice to observe by an advertisement in the *Morning Chronicle* of August 23., about to be established. The situation is about half a mile to the westward of Gravesend. A handsome new pier has already been erected by the proprietor of this and the adjoining ground, to be devoted exclusively to the visitors of Rosherville. None but houses of the first respectability are to be built in the neighbourhood. The gardens are encompassed by chalk cliffs of a vast height, around which a splendid promenade is to be made for the visitors. The animals, plants, &c., will be procured under the direction of gentlemen, most competent and experienced judges of zoological and botanical science. The grounds will be laid out by a most eminent artist. A capital of 10,000*l.* is to be raised by debentures of 20*l.* each.

Dr. Mac Fayden, President of the Horticultural Society of Jamaica, whose name our readers must have frequently seen in this Magazine, is now in this country, superintending the printing of the *Flora* of his adopted island. The doctor has been the means of successfully introducing the aracacca plant to the Glasgow Botanic Garden, where it is growing vigorously. Dr. Mac Fayden is of opinion that this vegetable will, in all probability, soon be added to the number of our culinary esculents. The root is about the size and colour of that of the parsnep; and it has nearly the same flavour. We hope to receive some account of the mode of treating the plant in the Glasgow Botanic Garden from our friend the curator, Mr. Stewart Murray.

Mr. Charles H. J. Smith, landscape-gardener, Edinburgh, is now on a tour in France, Belgium, and Germany, for improvement in his profession.

Vicinity of Trees to Highways. — An important decision, under the General Highway Act, was given at the Guildhall, Canterbury, on Monday, May 11., before the mayor, aldermen, &c. The surveyors of the highways had given notice to Mr. Sandys to remove certain trees which he had recently planted in front of his dwelling-house in Bridge Street, Canterbury. Mr. Sandys contended that the trees were planted on his own freehold; and he produced a grant from the corporation in 1812, which comprised the land in question; and, although he had dedicated the footpath to the use of the public, yet he had retained, by posts and chains, the line or boundary upon which the trees were planted. Mr. Sandys pointed out a great number of other places where the trees were within 15 ft. of the centre of the road. The mayor, having conferred with the other magistrates, stated that they were unanimously of opinion that Mr. Sandys's trees are within the act, which makes it illegal to plant trees within 15 ft. of the centre of any road. (*Kentish Gazette*, May 17.)

New Plant-Houses at Woburn Abbey and Trentham Hall. — A correspondent informs us that Mr. Clark, the hot-house manufacturer of Lionel Street, Birmingham, is now at work at a very extensive range of flower-houses for the gardens at Woburn Abbey, which, when completed, will form one of the most spacious and magnificent range of houses in the kingdom. He is also at work at a conservatory, to be erected at Trentham, for the more immediate use and recreation of the Duchess of Sutherland, and which is altogether upon a novel and greatly admired mode of construction.

Black Grub of the Turnip Saw-fly. — An arrangement has been made between the Entomological Society and the Agricultural Association of Saffron Walden, whereby the sum of ten guineas has been proposed as the prize for the best essay (to be drawn up from personal observation) upon the natural history and habits of the turnip saw-fly, the larva of which is known under the name of the nigger, or black Jack; to be illustrated by figures of the insect in its different states; together with the result of actual experiments made for the prevention of its attacks, or the destruction of the insects themselves. The essays are to be accompanied by testimonials of the success

of the remedies proposed by the writers, and must be forwarded to the secretary of the Entomological Society, No. 17. Old Bond Street, London, with fictitious signatures, on or before the fourth Monday in January, 1838; when they will be referred to a committee, to stand upon their respective merits; after which, with the permission of the writers, both the prize essay, and any others of value, will be published. The essays must be respectively accompanied by a sealed letter, indorsed with the fictitious signature adopted by each author, and enclosing the real name of the writer. — *J. O. W.*

Victòria regàlis. — This is the name given, by permission of Her Majesty, to a new plant allied to the water lily, discovered in the river Berbice, in January, 1837, by Dr. Robert H. Schomburgh. A description of it was read at a meeting of the Botanical Society, held September 7., by which it appears that the leaves are orbiculate, from 5 ft. to 6 ft. in diameter, bright green above, and bright crimson below. The stem of the flower is 1 in. thick, and the flower itself is 15 in. in diameter, consisting of many hundred petals, passing in alternate tints from pure white to rose and pink. When the flower first opens, it is white, with pink in the middle, which spreads over the whole flower as it advances in age; and the second day it is generally found of a pink colour. The flower is sweet-scented, and, like the genera *Nelúmbium*, *Nymphæ'a*, &c., it possesses a fleshy disk, with the petals and stamens passing gradually into each other. (*Athenæum*, Sept. 9. p. 661.) [We hope this splendid plant will soon be introduced; and that an aquarium worthy of Her Majesty, and of the present advanced state of horticultural science, will be formed in the Botanic Garden at Kew for its reception. — *Cond.*]

Eucalýptus alpìna. — Enclosed, I send you a specimen of Eucalýptus alpìna, gathered from a plant which has had no protection this winter. It has been planted out only one year (it is now three years from the seed), and is 2 ft. high. It appears to be of a slower growth than any other species that I am acquainted with, and is of a bushy compact habit, of which the specimen sent will give some idea, sending out laterals at almost every joint. I think I mentioned before, that it was sent me by James Backhouse, from Van Diemen's Land, who describes it as a tree growing on the highest parts of Mount Wellington, where the climate is very similar to that of England. *Frederick Mackie. Norwich Nursery, May* 4. 1837.

Pàvia macróstachys (*fig.* 122.) *at the Vicarage, Rickmansworth*, is 16 ft. in height, and consists of numerous branches from the same root, overhanging a space of 29 square yards. I purchased it about twenty-eight years ago, when the plants of the late Emperor Thelluson Woodford, Esq., of botanical celebrity, were disposed of on his quitting Springwell Place, in this neighbourhood. It stands within a few yards of a rivulet, in a dark porous soil, on a bed of fine gravel, about 2 ft. below the surface; and which is very evidently such a soil as suits it. I have given numerous layers and suckers to different friends; but, though many of them have flourished, none have done so in a degree equal to that of the parent plant. — *Edward Hodgson.* [This appears to be the largest plant of Pàvia macróstachys in England; the next largest is that at White Knights, 15 ft. high. See *Arb. Brit.*, p. 474., where, among other information, it is stated that the fruit of this plant, in America, is eaten boiled, or roasted. — *Cond.*]

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SCOTLAND.

Allanton Park, the seat of the late Sir Henry Steuart, author of the *Practical Planter*, is now in the possession of Sir Henry's daughter, Lady Mac-

donald Steuart. A correspondent, who has lately visited the place, informs us that she is as enthusiastically devoted to arboriculture and landscape-gardening as her late father. That part of the Park, he says, " which has been planted *à la Steuart* astonished me not a little. I took out my tape and book, and made measurements and notes, and I shall endeavour to put them together for you as soon as I have leisure." [We trust our correspondent will bear his kind promise in mind; for we are sure any information respecting Allanton Park must be interesting to our readers. — *Cond.*]

The Marriage Beech at Inverary. — I have been always on the look out for any thing particular in *our line*, and have stumbled across nothing but a curiosity in the shape of a beech at the Duke of Argyll's, Inverary, called " the Marriage Tree." It has two stems, which are united, about 20 ft. from the ground, by an arm in a very singular manner, which I hope a drawing I have made will render quite comprehensible. I measured every requisite, and was extremely particular with my pencil, not only in giving the general appearance of the tree, but also the junction at large. — *W. A. N. Edinburgh, Aug.* 5. 1837. [The portrait of this tree will be given in the *Arb. Brit.* — *Cond.*]

Singular Oak in the Western Highlands. — Near the waterfall at the head of the river Leven, which runs into the salt-water lake of that name, is the trunk of a decayed oak, rotten within, but alive on some parts of the outside. From one of these, a shoot grows out, about 15 ft. from the ground; and this shoot has protruded from its lower part a root, which, after having reached the ground (8 ft. below, and a bare rock), runs along the rock in a horizontal position, about 30 ft. further, till it reaches a bank of earth in which it has taken root. This remarkable tree was seen, in 1819, by Mr. Mackay of the Trinity College Botanic Garden, Dublin, who gave us the above account. The waterfall where the tree stands is about 10 miles above Ballyhulish, opposite to Glencoe. This remarkable oak was pointed out to Mr. Mackay by the Rev. Mr. Brown of the Episcopal chapel, Aberdeen. If any of our readers have seen the tree lately, we shall be very much obliged to them for an account of its appearance at the time they saw it. The moisture of the atmosphere in such a situation accounts for the root running to such a distance above ground; in a dry and warm atmosphere, it could not have done so. — *Cond.*

Art. IV. *The West London Gardeners' Association for mutual Instruction.*

Feb. 27. 1836. — Mr. Ayres read an essay upon the propagation of plants by cuttings, and referred chiefly to the practice of allowing the leaves to remain on the cuttings, or not, according to the situation in which they were placed, as liable to, or prevented from, evaporating their juices; also to the system of cutting the shoots of some hard-wooded green-house plants half through, for some time before inserting them in the cutting pots; and the propriety of allowing all cuttings to remain in the same temperature as that in which the plant was placed from which the cuttings were taken, until the base of the cuttings gave evidence that a callus was formed, when they might be placed in bottom heat, for the purpose of expediting the protrusion of roots. Mr. Ayres left the construction and general management of the propagating-house to another opportunity. Mr. Fish corroborated the general propositions of Mr. Ayres. Mr. Gibbs instanced a case, in which he lost a considerable number of pelargonium cuttings, from putting tham at once into bottom heat. Mr. Russel mentioned a successful mode of propagating the *Elichrysum* proliferum; namely, taking off the shoots of the previous year close to the stem; inserting them in fine silver sand under a bell-glass; watering them moderately, and setting them close to the glass in a hot stove.

March 13. — Mr. Leyton gave a lecture upon mineral waters, illustrated by many chemical experiments. After urging the Society to persevere in the

praiseworthy cause they had taken up, and having pointed out the emulation which companionship in study calls forth, Mr. Leyton pointed out the necessity of using soft and pure water for the more delicate botanical productions; showing how it was reasonable to suppose that mineral waters would injure plants in various degrees, according to the circumstances in which they were placed; and giving it as his decided opinion that mineral waters would be poisonous to vegetables, unless the mineralising portion of them could be proved to be a necessary ingredient in the plant to which they were applied. He then showed the distinction between rain water, sea water, and mineral water; and, by means of prepared waters, and various chemical tests, he practically explained how any substance, hitherto found in mineral waters, could be detected and recognised. He also showed experimentally that, at most, not more than eight of the various substances he had enumerated, and produced tests for, could exist in any one water at the same time, on account of the several double decompositions which they cause amongst one another, by which some of their component parts would be precipitated in the shape of insoluble compounds. After the lecture, the meeting was addressed by Mr. Keane, Mr. Caie, and others, with respect to the motives and usefulness of the institution.

March 27. 1837. — A letter was read from Mr. Aiton, stating the impossibility of his being present to give his essay upon the cultivation of the pine-apple; when it was resolved that the subject should nevertheless be discussed. Mr. Fish opened the discussion, by referring to the importance of gardeners, when cultivating tropical fruits, proportioning the temperature to the presence of light, as the effects of heat upon a plant would be very different, when growing in our stoves in winter, to what it would when the same plant was exposed to heavy dews at night, and the full influence of a tropical sun by day. He detailed some experiments, some of which had been unsuccessful, but the results of which convinced him that if, in the winter months, the roots of pine-apples were kept in a temperature of 50° or 60°, the top of the plant would receive no injury at 40°, provided the leaves were kept dry. In connexion with this, he also referred to the great saving of time, and expense for fuel, that was the result of keeping a low temperature at night, and a high temperature, with little air, during the day. He also adverted to the different methods of supplying heat. The varieties which he recommended for cultivation were, the queen, Otaheite, and Providence, for summer; and the black Jamaica, and globes, for winter. The soil, fresh loam, or a year old, but never turned previously to being used; mixing sand and leaf-mould when too adhesive, and old mushroom dung if not rich enough. He also adverted to the system of propagating from old stools, and the different methods of shifting, before placing the plants in the fruiting pots; preferring keeping the best of the roots of nursery and succession plants, after shaking the earth from them, to either potting them with balls entire, or cutting all the roots away.

Mr. Russel corroborated the leading ideas of Mr. Fish, but considered one great point had been overlooked; namely, the means of destroying insects, and he gave the recipe which he had found most effectual; viz. the pouring of boiling water on two ounces of quicksilver, in a six gallon pot, and using it when milk-warm. He, however, mentioned a gardener who was very successful in growing good pines, and yet whose plants were foul, and who had never tried to make them clean. Mr. Ayres approved of the general statements advanced; recommended the true Montserrat, as the best pine for winter fruiting; ridiculed the prevalent notion of black pines being so long in fruiting; detailed an instance, in which the fruit being taken from the plant in autumn, the suckers were removed from the stools in February, and brought excellent fruit in November following; and also an instance, in which a few good queens were cut in six months after being moved from the parent plant. He attached little importance to insects, contending that, under good cultivation, they would soon disappear; and asserted that the remedy proposed by

Mr. Russel failed even under Speechly, the originator of it. He then adverted to a case in which a gardener, who had a beautiful stock of pines, intended to shake them out of the pots, and repot them when they had done flowering; and mentioned a method of making plants start into fruit; namely, the watering them with a solution of pigeons' dung. Mr. Judd stated that he had seen fine fruit from plants grown in a temperature of not below 70° in winter, and 90° in summer; but ultimately agreed in the correctness of Mr. Fish's statements upon this point, though he considered he had been very unfortunate in selecting his winter fruiters. He recommended the Jamaica and smooth Havannah. The remedy for insects which he had seen prove most efficacious was, washing the plant in a solution formed of three pounds of yellow soap in a gallon of water. He had known old and fresh soil used with equally advantageous results, and recommended enriching the soil with deer dung; noticing that black pines delight in light soils, and thrive well when a little peat is added to the loam. Mr. Keane considered that, in cultivating the pine, we should imitate nature; but he thought that the low temperature at night, and in winter, which was recommended, was not natural to the pine. Mr. Caie contended, that, although we could command the heat of Jamaica, we could not command its sunlight, and that therefore a uniform degree of temperature in this climate was not natural; illustrating his remarks, by detailing an instance, in which the attempt was made to imitate closely the temperature of a tropical climate; but, though the plants grew remarkably well, the fruit were like buttons. A number of other members addressed the meeting; but no new idea was elicited.

A letter was read from Mr. Main, containing some wise parental advice to the Society; expressing his anxiety and his willingness to clear up, as far as lay in his power, any knotty question which came before them. Mr. Leyton was unanimously elected a member of the Society.

April 3. — Mr. Caie read an essay upon the grouping system of flowers in flower-gardens, with a coloured plan; and referring, amid a number of other facts, to the importance of planting naturally luxuriant plants shallow, and in poor soil, for the purpose of insuring a profusion of bloom. All united in expressing their high approbation of this essay: but an animated discussion took place on it, from Mr. Fish expressing his doubts if ever the system would become prevalent, unless in small places, and under liberal employers, owing to the extra expense attending it when a reserve garden was kept; and, when one was not kept, the unsatisfactory results of attempts at grouping, the flower-garden being quite useless till the month of July; or the young plants being to be observed in it groping their way through masses of the decaying herbage of bulbs, &c.; or, what was worse, the leaves of the bulbs must be cut down prematurely, and thus their flowering injured for a following year. Also, that there was a discrepancy among the supporters of the grouping system; some contending that it was the highest perfection of the art; and others, that it was the closest imitation of nature, as, in reality, while the form on the clumps indicated art, the mass of flowers in the clumps showed that, after the plants had been put into the soil, little more art had been put in requisition; and that, as gardening was universally allowed to be an art, the application of that art ought at all times to be perceptible, &c.

Mr. Judd considered that bulbs would suffer little from being cut down a little too early; made some remarks upon unity of idea; and contended that it was quite unnatural to see plants standing as isolated specimens. Mr. Russel contended that an industrious gardener would always find time for the grouping system, if he were disposed. Mr. Ayres showed how the form of the garden should be in accordance with the point of sight, and the form of the clumps, such as to constitute a whole. He also adverted to several plans in the *Gardener's Magazine*, and to the striking deficiencies in the arboretum and flower-garden of the Horticultural Society; and concluded with hoping that gardeners would imitate Mr. Caie, and show such an acquaintance with the subject, that they would no longer be obliged to succumb to the ideas of architects, and

would-be landscape-gardeners, however inconsistent with the principles of design and true taste these ideas might be.

April 17. — Mr. Leyton gave an introductory lecture upon chemistry. He commenced by tracing the rise and progress of chemistry from the earliest ages. He first treated of the great progress it must have made before the time of Moses, from the curious manufactured articles mentioned in the sacred writings. He next viewed the profound depth which the Egyptians must have penetrated, into this science from the relics yet extant, and the apparent miracles which their adepts in the science were able to perform. He also touched upon the chemical improvements introduced by the Persians, the Phœnicians, the Arabians, and the Chinese. Mr. Leyton then explained, at considerable length, the false notions of the alchymists, in respect of their doctrine of the philosopher's stone; the panacea, or universal remedy, the universal dissolvent, and the universal ferment. He also showed how several useful discoveries were brought to light in the midst of these wild schemes of infatuated deception, and finished by enumerating what great men, what great discoveries, and what altered notions of philosophy, brought about the change from alchymy to a rational system of chemistry.

May 1. 1837. — *Exhibited.* Three rose plants, from the Duke of Devonshire's villa at Chiswick, very full of buds, which had been taken out of the ground, and potted the same spring. Mr. Judd read an essay upon the preparation of the cherry tree for forcing, with hints upon the construction and general management of the cherry-house. Mr. Judd approves of the May duke variety; recommends purchasing the trees from the nursery two years before forcing them; planting them, at first, in the open ground; taking them up and potting them early upon the following autumn; plunging the pots in an open space of ground; covering them with old dung; watering them liberally during summer, and pinching off any blossoms that appear; giving plenty of air on removing them to the forcing-house, commencing at from 40° to 50° Fahr.; shading the house when the fruit are stoning; raising the temperature when beginning to colour; and using tobacco-smoke and tobacco-water for thrip, black fly, and caterpillar. A great number of members delivered their sentiments on this essay; the only objection made being to the accompanying plan; some considering that it was rather flat for early forcing; and that, as two fires were used, two small houses might have been as serviceable. Mr. Temple recommended syringing with water, scarcely so hot as the temperature of the house. Mr. Ayres disapproved of animal manure for stone fruit; which was met, and remet, by instances and facts corroborative of its favourable and unfavourable tendencies. A discussion took place with respect to clearing cherry trees from insects; washing or painting them all over with various solutions, in winter, being considered the best method; and various remedies were mentioned for the destruction of the thrip, though it was allowed no effectual mode of destroying that insect has yet been discovered.

May 15. 1837. — Mr. Leyton gave his second lecture upon chemistry, and commenced by exemplifying the theory of Phlogiston, invented by Stahl, which was supported for nearly half a century by all the greatest chemists of the age. He then proceeded to elucidate its overthrow by the more rational theory of Lavoisier (after the discoveries of Priestley and Black), who established oxygen as the universal acidifying and alkalising power, as well as the supporter of life, and combustion. He then referred to the overthrow of the latter theory, by the sublime discoveries of Sir Humphry Davy in respect of chlorine, iodine, &c.; showing that the most powerful of the acids (muriatic acid) was destitute of oxygen, &c. Mr. Leyton, dividing his subject into three divisions (the simple substances, the compound substances, and the laws of decomposition and recomposition), expatiated upon the simple gaseous elements, and the peculiar compounds they form with each other. He then pointed out the remarkable contrasts effected by the combination of some of the gases, such as in nitrous and nitric acid, which are composed of the same substances as form atmospheric air, but in different proportions, showing that a greater

volume of oxygen than that existing in the atmosphere is unrespirable and destroys life. He also alluded to the undisputed fact, that water is a compound of the elements of fire, and that, during the action of burning, it is actually produced; with many more chemical phenomena of equal importance.

Art. V. *Retrospective Criticism.*

Errata. — In Vol. XII. p. 445., in the *Botanical and Horticultural Tour in Lombardy*, there occur several errors of the press, which I should be much obliged to you to correct. In page 445. line 24., for "La Casino," read "La Cusani;" in lines 28. and 30., for "Casani," read "Cusani;" in line 29., for "200," read "300." In page 446. line 12., for "scopra," read "scopre;" in line 36., for "Nì strepito," read "Nè strepito;" in line 38., for "Ancor turbo," read "Ancor turbò;" in line 42., for "scorza de faggi," read "de' faggi;" in line 43., for "Segnio," read "Segnò." In page 447. line 4., for "Sien volto," read "Tien volto;" in line 10., for "Piranesi," read "Piermarini;" in lines 18, 19, and 20., for "Villaresi," read "Villorese;" in line 23., for "Pelagi," read "Palagi." In page 448. line 21., for "Cabrisi," read "Cabrini;" in line 23., for "Bartolotti," read "Bertolotti." In page 449. line 8., for "via spuona," read "vix spinosa." — *G. Manetti. Monza, January* 4. 1837.

Grafting Oranges on the Pomegranate. — The American Consul at Malta will write to you to confirm the fact I mentioned in my paper on the influence of the stock on the graft, that oranges are ingrafted on the pomegranate, to give the flesh a red hue. The practice is common in Sicily and Malta. — *J. Mease. Philadelphia, July* 28. 1837.

Grafting the Plum on the Fig, &c. (Vol. XII. p. 52.) — There are axioms in horticulture, which have been inculcated by the poets of antiquity, by which it was established, that the graft will grow on any tree chosen, provided the bark of the stock resembles that of the graft; and I remember having read in a work written on horticulture by Abu-Zacaria, an Arabic Spaniard, of grafting the vine on the plum, the peach on the willow, the rose on the pomegranate, and the almond on the vine: but what made me laugh the most heartily was, that, when the vine is grafted on the broom, the grapes are bitter. You know that we were for a long time governed by the Spaniards; and, in leaving their superstions behind them, it is natural to suppose that they also left these admirable maxims in horticulture. There is little doubt but that what I am about to relate to you is a superstition left by the Spaniards. You know that, in Italy, the greater number of the houses in the country front the south, and are generally covered with vines and other kinds of fruit trees, which (as may naturally be supposed) are of the best kinds. Mice and rats abound more near the houses than in the fields; because they find food there without much trouble; and, as soon as the fruit begins to ripen, they do exactly as I would do myself; that is, they eat as much as they can of it. To prevent this mischief, the peasants prune their vines or other fruit trees on the vigil of the Annunciation, that is, the 24th of March; hoping by so doing to obtain a curse on these poor animals from the Virgin, and a blessing on the vine, and by this means to preserve its fruit. Do you think that, because the vines are pruned on the vigil of the Madonna, the mice refrain from tasting them? Yet the good peasants (though not all of them, as there are some who laugh at it) believe in this practice, and continue it, attributing a failure in the crop to their sins! Among the gardeners, there are some, and those not few in number, who persist in doing what their fathers did before them, who still believe that the moon has a great deal of influence on vegetation; and who still stand with a watch in their hand waiting for the time of the full moon in March to sow the seeds of the violet; but there are, I believe, no longer any who believe that, if the pith be taken out of a branch of a fruitful tree, that branch will produce fruit without seed. — *G. Manetti. January* 4, 1837

Encyclopædia of Agriculture. — I have been lately perusing, with much pleasure, the new edition of your *Encyclopædia of Agriculture.* — Before you publish another edition, you ought to get more correct information from this colony, which is becoming a much more interesting country than you seem to be aware of. It is certainly the most prosperous part of the British dominions. — *Alexander M'Leay. Sydney, March* 13. 1837.

The Manchester Botanic Garden. — Your correspondent Mr. Thomas of Prestwich remarks that our garden has "a remarkably flat surface." I consider it a raised uneven platform in the centre of an extensive plain, which, in clear weather, is seen bounded on the east by the huge hills of Yorkshire, and on the south by the agreeable undulations of the hills of Cheshire. The view from the terrace walk in front of the range is varied and delightful. — *A. C. Manchester, August* 13. 1837.

The Yew and the Small-leaved Elm. — In your *Arboretum Britannicum*, you seem to doubt whether the yew and the small-leaved elm are natives of Britain. These trees are both found (the latter in abundance) buried deep in the bogs of Somersetshire, which I think conclusive evidence of their being both indigenous. I have also found the remains of our common small-leaved elm in the foundations of Roman villas. This elm will sometimes ripen its seed in this country; and I can point out at least one variety which must have been so produced. — *Samuel Hassel. Littleton, near Somerton, August* 1. 1837.

The Fúngi of the Oak. — In your history of the oak in the *Arboretum Britannicum*, you notice my discovery of *Urèdo Quércus* in this neighbourhood, which I conclude you had from the Rev. Mr. Berkeley, to whom I have sent all the *Fúngi* I have collected; and I also conclude that he has furnished you with notices of all the others, which he might have received either from me or his various correspondents. In your last number of the *Arboretum*, under the hornbeam, you say Sphæ'ria fimbriàta and carpínea on the leaves have not been observed in this country. S. fimbriàta is very abundant in this district, especially on the Norfolk side of the river; and I have sent Mr. Berkeley a great number of specimens: indeed, I could, if necessary, send him any number. It is published in the *English Flora*, and also in his (Mr. Berkeley's) first fasciculus of specimens, which came out, I think, in the early part of last year. — *Daniel Stock. Bungay, August* 4. 1837.

Art. VI. *Queries and Answers.*

Two Villas at Stanmore. — Can you, or any of your readers, inform me if the following description, translated from the original edition of Pückler Muskau's *Letters*, be real or imaginary? It is many years since I passed through the beautiful village of Stanmore on my way to Cashiobury; and I certainly do not recollect any villa at all striking. — *J. A., Chester, July*, 1837.

"We setout this morning early, unfortunately a very wet day. At ten miles from London, we already began business in the pleasant village of Stanmore, by seeing two villas and a large park. The first villa was in the Gothic style throughout, with ornamental pointed tile roofs; a style in which the English architects are very fortunate, and which, I may almost say, is their favourite. The interior was most delightfully arranged in the same style, yet perfectly habitable and comfortable. Even the doors in the walls which surround the kitchen-garden had painted old windows above them, which had a striking appearance amongst the flowering shrubs. The small flower-garden was also laid out in Gothic-formed beds, ornamented by gravel walks; and the effect was very good.

"The second villa presented a very different appearance; it was in the Italian taste, with large vases in front, in which, instead of flowers, were seen small pumpkins, and yellow and green scooped-out oranges, towering upwards. Somewhat too many wooden and white-painted statues adorned, or rather disfigured, the garden; amongst which was a lion in the attitude of suddenly

rushing forth, and meant to inspire terror, but in vain. In like manner, a Cupid, in the branches of a tree, was threatening to shoot his arrows at the passers by." (*Briefe einers Verstorbenen*, vol. iii. p. 205.)

The Gothic villa alluded to in the above letter was built by Dr. Hopper; the other by Mr. Orme, the printseller of Bond Street, after he had retired from business; a proof that familiarity with fine pictures does not always improve the taste. — *Cond.*

A fine Elm, in a field close by the road leading towards Woburn Sands, and about half a furlong from Woburn, was struck by the electric fluid on Thursday last (Aug. 24.), "and the bark stripped from the top of the highest branch down to the root. The strip appeared very narrow at the top, and gradually increased to about 8 in. in breadth near the bottom, where the electric fluid entered the earth. Another elm, near the residence of Capt. Hoare, in the parish of Waverden, was also struck, and split from top to bottom, the rent towards the bottom penetrating about a foot into the solid part of the tree." (*Morn. Chron.*, Aug. 28.) [We should be glad to know from any of our readers in the neighbourhood of Woburn, whether there were any pines or firs in the immediate vicinity of the elms, and of equal height; and whether these escaped unhurt? Our object is to confirm or disprove the hypothesis, which states that resinous trees (resin being a non-conductor) are less liable to be struck with lightning than broad-leaved trees. — *Cond.*]

Art. VII. *The London Horticultural Society and Garden.*

July 18. 1837. — *Exhibited.* Balsams, dahlias, *G*naphàlium exímium, *N*epénthes distillatòria, Oncídium papílio, *E*rìca brun*ìades*; Clerodéndrum frà-grans, double; Amar*ýllis* sp., Pimelèa híspida, Alstrœmèr*ia* pelegrìna, Catasètum lùridum, Gardoquì*a* Hoóker*i*, and Alstrœmèr*ia* psittacìna; from Mr. Dunsford, gardener to Baron Dimsdale. A collection of heartsease, pinks, and two picotees, from Mr. Thomas Hogg. Peaches, nectarines, grapes, a new green-fleshed melon (Windsor prize), and two dwarf crimson coxcombs, from Mr. P. Flanagan, F.H.S. Peaches and nectarines, from Mr. Errington, gardener to Sir P. G. Egerton, Bart. Apples of 1835 and 1836, from Lord Wm. Fitzroy.

From the Garden of the Society. Phacèlia tripinnatífida, Quisquàlis índica, *C*ombrètum purpùreum, *L*ýchnis Bunge*àna*, *L*ílium japónicum, *G*íl*ia* tenuiflòra, Alstrœmèr*ia* pulchélla, Chelòne nemoròsa, *S*piræ*a* *a*riæfòlia, *P*hiladélphus Gordon*iànus*, *P.* grandiflòrus (from Mr. Gowan), Chinese, Noisette, and garden roses; dahlias.

Awarded. A silver Knightian medal to Mr. Errington, for nectarines. A silver Banksian to Mr. Flanagan, for Grapes; and to Mr. Dunsford, for Catasètum lùridum.

Aug. 1. — Dr. Henderson in the chair. Dr. Lindley read a copy of an address which had been delivered to Her Majesty by the Duke of Devonshire, requesting her royal patronage, which was accorded. A paper was read "On a simple and effective Mode of killing the Red Spider, Green Fly, Thrip, and Scale, without injury to Plants." It merely consisted in putting the pots or plants into a frame, well closed, and then laurel leaves, well bruised, between them; when, in the course of one hour, the whole of the spiders and flies would be destroyed by the odour, which, of course, is that of prussic acid; while the thrip and scale would be destroyed in about eight hours; the night time being most favourable for the experiment. For a house 20 ft. by 12 ft., two bushels of leaves would be sufficient.

It is known to entomologists that a bruised leaf of the common laurel, put into a pill-box, along with a humble bee, will kill it in a few seconds. As there is a good deal of prussic acid in the leaves of the peach and nectarine, when these trees get their summer prunings, perhaps some use might be made of the bruised leaves, by laying them in melon-frames, in which the plants

were infested with the red spider; or the acid might be procured, and the plants watered with it in a diluted state; after which the frame should be shut closely up.

Exhibited. Stanhòpe*a* insígnis, Zygopétalon rostràtum, Gongòr*a* atropurpùrea, and Acropèra Loddigèsi*i*, from Mr. P. N. Don, gardener to J. Bateman, Esq. Stanhòpe*a* insígnis var., and Cattlè*ya* críspa, from Mr. Paxton, gardener to the Duke of Devonshire. Twelve varieties of *V*erbèna, Oncídium sp., Campánula frágilis hirsùta, *Tacsònia* pinnatistípula, and Clárk*ia* élegans var., from Mrs. Marryat. Stanhòpe*a* insígnis, from Mr. Pratt, gardener to W. Harrison, Esq. Dahlias from J. Salter of Shepherd's Bush. Picotees and roses, from Mr. F. Hogg of Paddington. Roses from S. Hooker. Strawberries from the Rev. W. Cobbold, Vicarage House, Selborne, near Alton. A collection of heaths, Campánula Carolìn*i*, Cleòme sp., *N*ymphæ'a cærùlea, Clerodéndrum speciosíssimum, &c., from Mrs. Lawrence. A dianthus, a seedling petunia, and an orchideous plant, from Mr. J. Moore, gardener to the Misses Garnier, Wickham, Fareham, Hants.

From the Garden of the Society. *L*upìnus ornàtus, mutábilis, and lùcidus; *L*ílium longiflòrum, Godèt*ia* rubicúnda and vinòsa, *Màdia* floribúnda, *M*álope grandiflòra; *P*hlóx acuminàta, and seedlings; Bartòn*ia* aúrea, *C*lématis Hendersòn*i*, *C*aprifólium hispídulum, Matricària grandiflòra, Digitàlis; from Mr. Bevan. Roses, dahlias, royal duke cherries, grapes; Windsor scarlet-fleshed melon, 3 lb. 14 oz.; planted out Feb. 15. cut July 29.

Awarded. A large silver medal to Mr. Paxton, for Cattlè*ya* críspa. A silver Knightian to Mr. Kedding, for Oncídium carthaginénse var.; and to Mrs. Lawrence, for heaths. A silver Banksian to Mr. Hooker, for roses; to Mr. Pratt, for Stanhòpe*a* insígnis; and to Mr. Hogg, for carnations and picotees.

Aug. 15.—*Read.* A paper "On the Culture of the *R*anúnculus, by Mr. Wm. Dunsford, gardener to the Hon. Baron Dimsdale.

Exhibited. *E*rìca cerinthòides, Ewer*àna*, ampullàcea rùbra, Bowie*àna*, &c.; Cychnòches Loddigèsi*i*, and Poinci*àna* pulchérrima; from Mrs. Lawrence. Gooseberry pippins of 1836, from Sir Henry Rycroft. *Vánda* multiflòra, Myánthus deltòides, Astélma exímium, Amaryllis Sweéti*i*, dahlias, stocks, and China asters, from Mr. Dunsford, gardener to the Hon. Baron Dimsdale. Hybrid melon, from Mr. J. Duncan, gardener to J. Martineau, Esq. Balsams, marigolds, and morello cherries, from Mrs. Nichols of Hammersmith. Seedling and other dahlias, from Mr. J. Salter of Shepherd's Bush. Túrner*a* *t*rioniflòra, Peristèria péndula, Acropèra Loddigèsi*i*, *P*ancràtium *Amáncae*, Epidéndrum ciliàre, Lantàna Séllowi, Vallòt*a* purpùrea, and dahlias, from Mr. Glenny. Black Hamburg grapes, balsams, and three vars. of heaths, from J. Alnutt, Esq. Oncídium Lance*ànum* and Eulòphia guineénsis, from J. Bateman, Esq. A collection of dahlias, from Messrs. Chandler. Otaheite, or Anson's pine, green-fleshed melon (Hampton Court), early Cantaloup melon, black Hamburg and muscat of Alexandria grapes, white spine and black spine cucumber, from Mr. P. Flanagan, gardener to Sir T. Hoare, Bart. Varieties of Indian corn, from P. A. Browne, LL.D. *E*rìca Ewer*àna*, exímia, *j*asminiflòra var. Lee's trícolor, ampullàcea, &c., from Mr. J. Fairburn of Clapham. Roses and dahlias, from Messrs. Paul and Son of Cheshunt. Dahlias, from Mr. Mountjoy of Ealing. Model of an apparatus for preserving fruit from the attacks of wasps and other insects, from Mr. Masters, gardener to Lady Maria Finch, Bexley Abbey, near Maidstone.

From the Society's Garden. Quisquàlis índica, *Œ*nothèra Drummóndi, *Petùnia* violàcea supérba, Diplopáppus incànus, Physiánthus undulàtus, dahlias, and gooseberries.

Awarded. A silver Knightian medal to J. Bateman, Esq., and to Messrs. Paul, for the Oncídium Lance*ànum*. A silver Banksian to Messrs. Paul, for roses; to Mr. Flanagan, for cucumbers; to Mrs. Lawrence, for *E*rìca Ewer*àna*; and to Mr. Alnutt, for *E*rìca ampullàcea.

Art. VIII. *Covent Garden Market.*

In consequence of the rains which have so generally prevailed in the early part of the present month, the market has been supplied liberally with all sorts of vegetables usually prevalent at this season of the year; more particularly with turnips, coleworts, &c. French beans were, for a time, rather short in supply, but have become more plentiful. Peas are nearly out, but some few are occasionally furnished. Potatoes are very abundant, and generally of good quality: the crop, throughout the country, is represented as being heavy; consequently, if harvested in good condition, for which the weather is at present very favourable, we may expect the supply, throughout the season, to be good at very moderate prices, especially as all other vegetables are expected to be equally abundant and good. Of fruits generally we have had considerable quantities: apples and plums in great abundance. It has been remarkable, that apples have been actually sold at less than potatoes. Wall fruit has been more plentiful than was expected. Grapes from the houses very plentiful. Walnuts, as yet, but in moderate supply, except from Holland, whence several cargoes have been imported. Filberts are scarce and dear, and of indifferent quality. — *C. G. M. Sept.* 27. 1837.

	From			To		
The Cabbage Tribe.	£	s.	d.	£	s.	d.
Cabbage, per dozen:						
White	0	0	9	0	1	3
Red	0	2	0	0	5	0
Plants, or Coleworts	0	1	6	0	2	0
Cauliflowers, per dozen	0	4	0	0	7	0
Broccoli, Cape, per bunch	0	0	9	0	1	0
Legumes.						
Peas, per sieve	0	2	6	0	3	6
Beans, per half sieve	0	1	0	0	1	6
Kidneybeans, per half sieve	0	3	6	0	0	0
Scarlet runners, per half sieve	0	1	9	0	2	0
Tubers and Roots.						
Potatoes, per ton	2	0	0	3	0	0
Turnips, White, per bunch	0	1	6	0	2	0
Carrots, per bunch	0	2	6	0	4	0
Parsneps, per dozen	0	1	0	0	0	0
Red Beet, per dozen	0	1	0	0	0	0
Horseradish, per bundle	0	2	6	0	4	0
Radishes, white turnip, per bunch	0	0	1	0	0	0
The Spinach Tribe.						
Spinach, per sieve	0	1	0	0	1	6
Spinach, per half sieve	0	0	9	0	1	0
The Onion Tribe.						
Onions:						
Old, per bushel	0	4	0	0	5	0
For pickling, per half sieve	0	2	6	0	3	6
Leeks, per dozen bunches	0	1	0	0	1	6
Garlic, per pound	0	0	6	0	0	8
Shallots, per pound	0	0	8	0	0	10
Pot and Sweet Herbs.						
Parsley, per half sieve	0	1	0	0	1	6
Tarragon, per dozen bunches	0	3	0	0	0	0
Fennel, per dozen bunches	0	2	0	0	0	0
Thyme, per dozen bunches	0	2	0	0	3	0
Sage, per dozen bunches	0	2	0	0	3	0
Mint, per dozen bunches	0	2	0	0	0	0
Peppermint, dried, per dozen bunches	0	1	6	0	0	0
Marjoram, per dozen bunches	0	2	6	0	3	0
Savory, per dozen bunches	0	2	6	0	3	0
Basil, per dozen bunches	0	3	0	0	0	0
Rosemary, per dozen bunches	0	5	0	0	0	0
Lavender, dried, per doz. bun.	0	2	0	0	0	0
Tansy, per dozen bunches	0	1	0	0	0	0

	From			To		
	£	s.	d.	£	s.	d.
Stalks and Fruits for Tarts, Pickling, &c.						
Angelica Stalks, per pound	0	0	6	0	0	0
Sea Samphire, p. small punnet	0	1	0	0	0	0
Vegetable Marrow, per dozen	0	1	0	0	1	6
Tomatoes, per sieve	0	8	0	0	10	0
Capsicums, per hundred:						
Ripe	0	4	0	0	6	0
Green	0	1	0	0	1	6
Edible Fungi and Fuci.						
Mushrooms, per pottle	0	1	0	0	0	0
Morels, per pound	0	14	0	0	0	0
Truffles, English, per pound	0	12	0	0	0	0
Fruits.						
Apples, Dessert, per bushel:						
Kerry Pippin	0	5	0	0	0	0
Ribston	0	9	0	0	0	0
Ingestrie	0	6	0	0	0	0
Baking	0	1	6	0	2	6
Pears, Dessert, per half sieve:						
Williams's	0	5	0	0	7	0
Marie-Louise	0	12	0	0	0	0
Brown Beurré	0	10	0	0	12	0
Peaches, per dozen	0	3	0	0	5	0
Nectarines, per dozen	0	3	0	0	5	0
Almonds, per peck	0	7	0	0	0	0
Plums, dessert, per sieve:						
Green Gages	0	7	0	0	10	0
Orleans	0	5	0	0	6	0
Mussell	0	3	0	0	4	0
Damsons, per bushel	0	3	0	0	4	0
Mulberries, per gallon (two pottles)	0	0	7	0	0	10
Walnuts, per bushel	0	8	0	0	10	0
Filberts, English, per 100 lbs.	5	0	0	9	0	0
Hazel Nuts, per peck	0	2	6	0	3	0
Pine-apples, per pound	0	5	0	0	6	0
Grapes, hot-house, per pound	0	1	6	0	3	0
Figs, per dozen	0	0	6	0	2	0
Melons, each	0	1	6	0	3	6
Oranges per dozen	0	1	0	0	3	0
Oranges per hundred	0	7	0	1	0	0
Lemons per dozen	0	1	0	0	3	0
Lemons per hundred	0	7	0	0	18	0
Sweet Almonds, per pound	0	2	3	0	2	6
Nuts, Barcelona, per bushel	1	0	0	0	0	0
Spanish onions, per 100	0	18	0	1	10	0

THE

GARDENER'S MAGAZINE,

NOVEMBER, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A Series of Articles on the Insects most injurious to Cultivators.* By J. O. WESTWOOD, F.L.S., Secretary to the Entomological Society of London.

No. 9. THE SLIMY GRUB OF THE PEAR AND OTHER FRUIT TREES.

IN my last article, I gave the history of an insect which, in the larva state, feeds upon the leaves of the apple, devouring the entire leaf. On the present occasion, I have to describe the proceedings of another leaf-feeder; but in this case the insect exhibits the singular instinct of eating only the upper surface of the leaf, leaving the under parenchyma with all the fibres and veins untouched. Such is the habit of the larvæ of several species of saw-flies, composing Professor Hartig's subgenus Blennocámpa, and which has obtained this name in reference to the unsightly appearance of the larvæ, which are ordinarily covered with a slimy secretion, giving them a resemblance to minute black slugs. In America, indeed, the name of slug-worm is given to one of these insects inhabiting that part of the world, and which, towards the close of the last century, became so prevalent as to threaten the destruction of the cherry, pear, quince, and plum; all of which trees were infested with it: the small trees being covered with insects, and a breeze of air through those on which they abounded becoming charged with a very disagreeable and sickening odour. Twenty or thirty were to be seen on a single leaf; and many trees, being quite stripped, were obliged to put forth fresh foliage, thus anticipating the supply of the succeeding year, and cutting off the prospect of fruit. (*W. D. Peck, Natural History of the Slug-Worm.* Boston, 1799.)

The peculiar odour mentioned above was evidently emitted by the slimy secretion with which the insect clothed itself, and which might be supposed to have the effect of repelling the attacks of parasites. Professor Peck, however, has figured a small hymenopterous parasite, apparently belonging to the genus Encýrtus (fam. Chalcídidæ), peculiar to it.

In our own country, for several years past, the same fruit trees, but more especially the pear, have been attacked by a species of these Blennocámpæ. In my father's garden, I have observed them both on the cherry and pear, and have, therefore, had opportunities for studying their habits. Mr. Loudon, also, has received complaints of its attacks from various correspondents, from whose letters the following paragraphs are selected.

Mr. R. Glendinning, under the date of the 20th of July last, forwarded from Bicton, leaves of the beurré Capiaumont pear, infested by these slimy grubs, which, "at first sight, present an appearance similar to that which has been so destructive to the turnips (described in Vol. XIII. p. 193.); but, on closer inspection, differing very much. It first attacks the epidermis of the upper surface of the leaves, which it lacerates, or almost wholly clears; although not always entirely so (*fig.* 123. *a*), as some of the pores, or stomata, appear untouched. The only antidote I have applied to this (to me) new enemy, is hand-picking them. Their ravages are astonishingly rapid, and leave the trees as if scorched with lightning."

Mr. John Clavier of Compton Gardens, near Sherborne, Dorset, on the 5th of September, forwarded some leaves with the larvæ, from a tree in that neighbourhood, on which were some thousands of the latter. Such had been the case for the last ten years, "the tree having a very bad rusty appearance; and the leaves every season prematurely dropping off. Nothing similar to this has ever come under my notice before."

Mr. John Fox also forwarded from Little Dalby Hall, Leicestershire, on the 14th of September, pear leaves with the larvæ, "which latter, when they become numerous, soon render the trees leafless. I saw several pear trees in a garden in this neighbourhood, which, on the 1st of September, were completely defoliated. The insects were first observed here about three or four years ago, and since that time their numbers have rapidly increased. I could not ascertain that any remedy had been applied for their destruction; but, if no means is obtained to gain that end, it is very evident that it will soon end in the destruction of the trees. I gathered three leaves with insects upon them, and dusted them liberally with quicklime, which had no other effect than causing them to cast off their outer skin and assume a yellow appearance. In four hours from the operation, they had fixed themselves as firmly to another part of the leaves as if nothing had been done."

When full grown, these larvæ (*fig.* 123. *a*) are nearly half an inch long, with the body somewhat cylindrical, but thicker towards the head; the anterior or thoracic segments having the power of inflation over the head. Except at the time of casting the skin, the body is covered with a viscid secretion,

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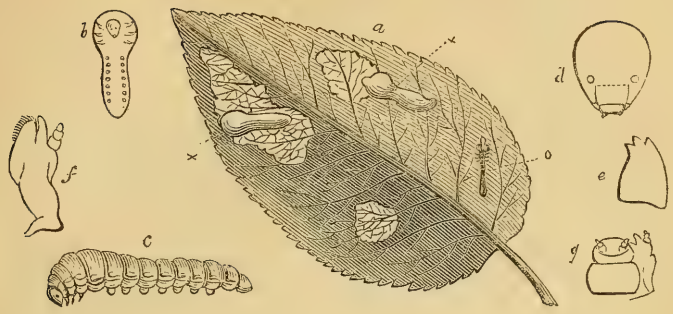

of a dark greenish-black colour, with the belly dirty clay-coloured. Whilst feeding, the front of the body is inflated (*fig.* 123. *b*, the ventral aspect of the larva whilst inflated), and the hinder segments narrowed; so that the insect somewhat resembles a minute tadpole, or, rather, the excrement of a swallow or sparrow accidentally dropped upon the leaves, which is increased both by its colour and slimy coat. On denuding it of this covering, the body appears of a fleshy consistence and wrinkled surface (*fig.* 123. *c*, magnified). It is furnished on the under side with twenty feet, a pair being attached to each of the thoracic segments: the fourth segment is footless; and each of the seven succeeding segments has a pair of fore legs, the extremity of the body being destitute of these appendages. The head (*fig.* 123. *d*, seen in front) is somewhat convex, of a triangular form, with the angles rounded. Neck narrower than the thorax, of a pitchy-brown colour, with the mouth dirty buff. The upper lip gibbous and semilunar. The mandibles (*fig.* 123. *e*) with three teeth. The lower jaws (*fig.* 123. *f*) furnished with very short 3-jointed palpi; and the lower lip (*fig.* 123. *g*) small, flat, bipartite, and furnished likewise with very short palpi. The antennæ minute, inserted near the sides of the clypeus, and of a conical form. The eyes lateral, globose, and placed above the antennæ. The breathing-pores brown. The viscid fluid with which the body is covered appears to exude from the articulations of the joints of the body, since, on rubbing it off, the insect swells itself out at the joints, and shortly afterwards a fresh secretion is seen to take place. After casting its penultimate larva skin, the power of secreting this liquid appears to be lost; the body, also, becomes of a conical-cylindric form, without the inflation of the thoracic segments. It also assumes a clay colour.

Dahlbom (*Clavis Nov. Hym. Syst.*, 1835) mentions *P*ỳrus, *P*rùnus, *C*ratæ`gus, and *S*àlix, as being liable to the attacks of this larva. During the day, it remains quiet on the leaf, with

the head retracted within the prothorax; but, during the night, it crawls slowly about from branch to branch. The exuviæ of the larvæ (*fig.* 123. *o*) remain attached to the leaves, and appear like a short slender black thread with a shiny head. Some of these larvæ, from the white thorn, collected previously to the middle of August, underwent their penultimate change of larva skin on the 16th of that month, and enclosed themselves in their cocoons on the 18th of the same month; the perfect insects not being produced until the following June and July. The cocoon (*fig.* 124. *h*) is very similar to that of the turnip saw-fly; being brown, and externally covered with particles of earth, fastened together with silken threads. The retraction of the head within the prothorax is of service to the insect whilst feeding, since it is thereby enabled to move its head in various directions, without changing its situation; and hence it remains stationary until it has eaten every part of the surface of the leaf within reach; when it moves a little further on: its movements, however, are extremely sluggish. The last segment of the body is generally elevated; so that when the insect discharges its excrement, it is compelled to employ considerable force, whereby it is shot upwards to some height. I have seen them occasionally fall upon the slimy back of the insect; but the grub has immediately removed them by twisting its body in various directions, fastening them with slime upon the leaf. When about to change their skin, they retire to the under side of the leaf, where they remain until they have acquired their new coat of slime. Immediately after they have changed their skin, they are of a clay colour, and destitute of slime; at which time they will occasionally bend their bodies, so as to make the head and tail meet. The secretion is rather glutinous, and has a strong scent, somewhat like that of red ink.

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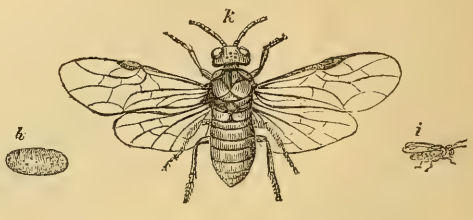


De Geer states that some of these larvæ, which he examined, enclosed themselves in cocoons at the beginning of October, the perfect insects appearing at the end of the following July; having thus passed nearly ten months in the inactive state. The female deposits her eggs on the upper surface of the leaves, by the assistance of her curiously formed ovipositor; and, in a few days, the young are produced.

This insect was known to Linnæus, by whom it was described as the saw-fly of the cherry, *Tenthrèdo cérasi*; which name, as

giving the erroneous idea of its being restricted to the cherry, has been rejected. It is now systematically known under the following names : —

Order, Hymenóptera.
Section, Serrífera.
Family, *T*enthredínidæ. } See Vol. XIII. p. 195.
Genus, Selándria *Leach.* (Synonyme of the genus Allántus *Bouché.*)
Subgenus, Blennocámpa *Hartig.*
Species, Selándria (Blennocámpa) Æthiops *Fabricius, Ent. Syst.*, ii. p. 121.; *Klug, Mag. Berlin Nat. Fr.*, viii. p. 279.; *Stephens, Illust. Brit. Ins. Mand.*, vol. vii. p. 51. *Fig.* 124.: *i*, natural size; *k*, magnified.
Synonyme of the species *T*enthrèdo cérasi *Linnæus, Syst. Nat.*, ii. p. 923.; *Réaumur, Mémoires*, tom. v. tab. 12. f. 1—6.; *De Geer, Mémoires*, tom. ii. part 2. tab. 38. f. 16—25.

Smooth shining black. Four anterior legs with the femora black, yellowish at the tip. The tibiæ testaceous. Posterior legs dusky black, with the knees, or tips of the femora, and base of the tibiæ, yellowish. Wings obscurely hyaline, with the nervures, costa, and stigma black; and a dot on the second submarginal areolet. Length of the body, $2\frac{1}{3}$ to $2\frac{1}{2}$ lines. Expanse of the wings, 5 to $5\frac{1}{2}$ lines. (*Stephens*, loc. cit.)

There are many species of this group very closely allied together; which, in all probability, are similar in their habits during the larva state: indeed, it is, perhaps, not improbable that the larvæ found on so many different trees as are mentioned above may belong to various species, hitherto confounded with the *T*enthrèdo cérasi of Linnæus. One species, indeed, has been separated by Schrank, under the name of *T*enthrèdo fuliginòsa.

The genus Selándria, here illustrated, is very closely allied to Athàli*a*, described in Vol. XIII. p. 195.; differing chiefly in having only nine, instead of ten, joints in the antennæ.

For the destruction of these insects, Mr. Glendinning recommends hand-picking; and Bouché, in his work on garden insects, gives the same advice.

Mr. Major recommends dusting the trees, when dry, with quick lime; the exuded matter produced by the insect retaining a sufficiency for its destruction. It will be seen, however, that Mr. J. Fox mentions the inefficiency of this mode of proceeding; it is nevertheless evident that the specimens upon which he operated were, at the time, ready to throw off their skin. Had the lime, on the contrary, been applied to those which had recently undergone their transformations, a different result might have been effected. This insect, however, affords a good opportunity for a few chemical experiments, which would doubtless insure a certain means for their destrution. The secreted viscid matter is so powerful, that any person acquainted with the prin-

ciples of ordinary chemical analysis would be able to ascertain its real nature and properties, and, consequently, to propose a proper remedy.

ART. II. *Notice of a Mode of destroying a Species of Moth injurious to the Vineyards of the South of France, employed by M. Audouin, Professor of Entomology in the Muséum d'Histoire Naturelle.*

(Extracted from *L'Echo du Monde Savant*, Sept. 9. 1837.)

THE Société Royale d'Agriculture, having been consulted by the Minister of Commerce and Public Works, as to the best means of arresting the ravages caused by a well-known species of *Pyralis* in the vineyards of Maçonnais, appointed M. Audouin to proceed thither, in order to gain the requisite information for stopping the progress of the evil. M. Audouin arrived in that country on the 5th of August. He soon perceived that the reports addressed to the minister had not been exaggerated; and found the cultivators so much discouraged, that no steps whatever had been taken to free themselves from the pest. "This," says M. Audouin, "was the first difficulty met with, which I have been fortunate enough to surmount, with the assistance of a few enlightened individuals, who conceived the happy idea of forming a union of proprietors, which has had the best effect." In fact, on the day after this union, the greater number of the assistants set themselves to work in earnest to adopt the measures recommended by M. Audouin. The season was too far advanced to allow the author of the *Mémoire* to study these insects in all their different stages of developement; but he had already, in 1836, observed some individuals sent to Paris from Romanèche, a territory of which the vineyards, as well as those of Thorins, occupied almost the centre of the ravaged country. At these places he had been able to examine at leisure the chrysalides, to watch the coming forth of the moths, the laying of the eggs, and their developement, until the appearance of the caterpillar, which takes place in August, at the time when the vines are covered with new leaves; but the insect does not commence its ravages till the spring of the following year.

The learned professor described two methods which he had used with success. It is known that one mode of destroying these injurious insects is the lighting of fires, to which they are attracted, and burn themselves. He has taken advantage of his former experience to modify this process in a very ingenious manner. He places a flat vessel with a light on the ground, and covers it with a bell-glass, besmeared with oil. The pyralis, attracted by the light, flies towards it; and, in the midst of the circle which it describes in flying, it is caught and retained by the glutinous

sides of the bell-glass, where it instantly perishes by asphyxia. Two hundred of these lights were established in a part of the vineyard of M. Delahante, about four acres in extent, and at a distance of 25 ft. from each other. These fires last about two hours; and scarcely had they been lighted, when a great number of moths came flying around, and were speedily destroyed by the oil. The next day the deaths were counted. Each of the 200 vessels contained, on an average, 150 moths. This sum, multiplied by the first number, gives a total of 30,000 moths destroyed. Of these 30,000 insects, we may reckon one fifth females, having the abdomen full of eggs, which would speedily have laid, on an average, 150 eggs each. This last number, multiplied by the fifth of 30,000, that is to say, by 6000, would give for the final result of this first destruction the sum of 900,000. On the 7th of August, 180 lamps were lighted in the same place, each of which on an average destroyed 80 moths, or a total of 14,400. In these 14,400 moths there was reckoned to be, not only one sixth, but three fourths, females: but, admitting that there was only one half females, or 7200; and, multiplying this by 150 (the number of eggs that each would have laid), gives a total of 1,080,000 eggs destroyed. Two other experiments were made on the 8th and 10th of August, which caused the destruction of 9260 moths.

The expense attending this process is a very great objection; but M. Audouin had recourse to a less expensive mode, namely, that of hand labour. These moths, as already observed, lay their eggs in clusters of about 150 each, on the upper side of the vine leaves. Each cluster contains a greater or less number of eggs; but 60 may be taken as the average. It is these eggs which give birth to the devastating insects. If the eggs were destroyed, the source of the evil would be totally arrested. On the 7th of August, 20 vine-dressers, women and children, were set to work, under the direction of M. Audouin, in the vineyard of M. Delahante; and this operation was continued till August 11. inclusive. The following is the result obtained: — 186,900 clusters of eggs were collected, which was equal to the destruction of 11,214,000 eggs. This operation was continued from the 12th of August to the 18th of August, by thirty persons, during which time 482,000 clusters of eggs were gathered; which, multiplied by 60 (the average number in each cluster), gives 28,920,000. Thus, in twelve days, from 20 to 30 workers destroyed 40,182,000, which would have been hatched in the course of from 12 to 15 days.

M. Audouin related several other experiments of the same kind which had been tried in various places. He thinks that collecting the eggs is superior to any other mode that has been proposed or put in practice; and, if used conjointly with the

lamps, it would be the certain means of annihilating this injurious insect. These two modes are far superior to the tedious and imperfect operation of destroying the caterpillars. It would not be prudent, however, to neglect the latter operation, which must only be considered as the resource of the improvident vine cultivator, who, in the preceding year, has neglected to remove the eggs from his vine leaves.

M. Audouin believes that he has found out a method of destruction superior to those just described, but he is desirous of making more experiments before laying it before the public.

From the above paper, the practical gardener may derive two very valuable hints. In the first place, he will see the powerful results that attend the seemingly minute and unimportant practice of hand-picking; a practice so often recommended by Kirby and Spence, and by Mr. Westwood, and yet, we fear, too generally neglected by cultivators. Much might be done in gardens by the employment of women for picking off the eggs of insects; one woman would be sufficient for an ordinary-sized kitchen-garden, from March to November; and a little experience with the net would soon enable her to catch and destroy many insects in the perfect state. The late Mr. Willmot of Lewisham employed one woman for upwards of 100 acres of nursery ground, solely for the purpose of keeping his trees clear of the woolly aphis; and he succeeded. The Rev. Thomas Williams of Hendon Rectory (whose garden, though less than an acre in extent, is yet, in point of culture and high keeping, equal to that of Mrs. Lawrence at Drayton Green, and, in the gardenesque disposition of a collection of the most rare and valuable trees and shrubs, superior to every other garden that we have seen) keeps one man during summer for the sole purpose of detecting and removing insects on his collection of pines and firs.

The second hint which gardeners may take from M. Audouin's paper, is that of employing, during the whole summer, moth-traps of the kind used by him. Cocoa-nut oil, as being the cheapest, may be used for the lamps; and any cheap sweet oil for coating over the outside of the bell-glasses; which glasses may be the same as those used for striking cuttings, the larger green kind used for covering cauliflowers, or even common hand-glasses. Perhaps coating the glass with gum and water might, in England, be cheaper than coating it with oil. The traps should not be set till it is nearly dark, and no more oil need be put in the lamp than what will keep it burning till daylight returns.

Traps of this kind can, of course, only be effectual with winged insects which fly about during the nighttime, such as moths, cockchafers, &c.; but, perhaps, some kind of trap might be devised for creeping insects, such as the wood-louse, the ant, the earwig, &c., as effective as M. Audouin's moth-trap. There is a

trap sold in the shops for beetles and cockroaches, which is very effective; and frogs, toads, and hedgehogs, are exceedingly useful in gardens for devouring insects.— *Cond.*

ART. III. *Remarks on the Origin and Direction of the woody Fibre of the Stems of Palms.* By JAMES MAIN, A.L.S.

I AM induced to offer a few remarks on a paper read to the British Association for the Advancement of Science, at Liverpool, on Tuesday, Sept. 12. 1837. The paper is said to be, "Some Observations on the Origin and Direction of the Woody Fibre of the Stems of Palms." Among other particulars relative to their habitat and dimensions, it is added, that "In longitudinal sections of the stem of a large species, the bundles of woody fibre were distinctly seen passing from the scars and bases of the leaves downwards and inwards, gently curving at an angle of 18°, till they nearly reached the centre of the stem; then, changing their direction outwards, they continued their *downward course* with greater obliquity than before, till they approached the external surface of the stem; after which they still descended in a line parallel with its axis, ultimately becoming so much ramified, that it was impossible to trace them.

"To Dr. Lindley's supposition, that the hardness of the exterior cannot be owing to the outward pressure of new matter from within, but to some cause analogous to the formation of heart wood in exogens, Mr. Gardner replies, that a longitudinal section of a palm stem, with leaves attached, clearly shows that the ligneous substance is formed by the leaves; and this affords collateral evidence of an analogous formation of the wood in exogens. The only difference between the formation of these two kinds of stems seems to be, that in the exogenous tribes the woody fibre always remains between the bark and the last-formed layer; while, in the palms, the bundles of woody tissue first pass downwards and inwards to the interior of the stem, then curve outwards, and finally run down parallel with the axis, through the previously formed tissues which constitute the column."

The gravamen of the above quotation certainly appears to be this; namely, that the woody fibres of both exogens and indogens are formed by the foliage of the former, and the fronds fo the latter. I know well that this hypothesis has been embraced by many eminent men; but it really appears to have been propounded without reference to the phenomena it was employed to explain. That leaves can acquire existence *before* the parts to which they are so intimately attached, from which they sprang, and which nourish and support them, is rather illogical; and why

should the observer, in seeking to find out the connexions of the different members of a stem, begin his tracing at the wrong end? Surely, the base of a stem had existence before the leaves, or fronds, on the top. The tracing should be according to the natural growth. See, first, where any member had or has its origin, and trace it upward as far as it extends; but do not proceed the contrary way, merely because it is stated in books that the accretion of a monocotyledonous stem is internal; which, by the by, only means that all new growth proceeds from the centre of the system. Observe the annual stem of asparagus: on its first appearance it is as large in diameter as it is when the seeds are ripe. Its growth is nothing but simple elongation: each of its attenuated leaves, and each of its capsules, is attached to the fibrous tissue; but who can assert, with reason, that each of these members *sends down* special fibres to compose the bulk of the stem? It is the same with the perennial trunks of palms: they are as large when only one foot high as when they are fifty. The fronds are, no doubt, all attached to, and proceed consecutively from, the base; each new, or youngest, one having a longer petiole than the preceding, and each oldest one, in its turn, dying off, but leaving a part of its base to form, collectively, the fibrous stem.

That fibrous tissues of the fronds curve inwards towards the centre, is perfectly true. It cannot be otherwise; because these, rising erectly in the middle, fall subsequently sidewise. A knee is formed on the footstalk at the point of flexure; but, though this curvature remains in the grain of the wood, it is every day becoming more straight by the lateral pressure of the central growth.

It is very evident that, if Mr. Gardner had never heard that there were such circumstances as sap and fibres running down the stems of palms, and if he had not been afraid of differing from authorities at home, he would have given a far more rational account of the ligneous structure of the stems of those majestic trees. Thus, however, it is with every hypothesis relating to natural phenomena, which is adopted without due reflection and careful examination. Every appearance of the object to be considered is bent and twisted, in order that it may dovetail with the reveries of our learned leaders. Hence, we see Mr. Gardner drifting with the current, and fixing the capital high in air, before one stone of the pedestal or column is laid!

That the living embryo exists in a seed before its roots are protruded, is a fact; and that a living cutting is destitute of roots until it is placed in a medium favourable to their developement, is no less evident; but both these are very different from the connexion between the leaves of dicotyledons, which *are* articulate with the fibrous membranes, and those of monocotyledons

which *are not*. It is, moreover, true, that some leaves of exogens emit fibres from the costa, when placed in moist heat; but this cannot be done with any dissevered part of a palm: its constitutional unity forbids all subdivision, except by seeds. There are no articulations among the members of a palm, except, perhaps, among those of the inflorescence. The fronds, from their intimate connexion with the stem, as described by Mr. Gardner, are only foliar expansions of that member; and, therefore, it appears much more reasonable to say, as well as believe, that they are parcel of the stem, rather than the contrary.

Chelsea, September 20. 1837.

ART. IV. *Notes on the Growth of Trees at Flasby Hall, near Gargrave, in Craven, Yorkshire.* By GEORGE WINTERSGILL.

MY employer, with whom I have now been upwards of fifteen years gardener, and who has long been observant on most subjects relating to natural history, having lent me his notes in full upon the growth of trees here, I am induced to forward a copy of part of them to you with his permission, trusting to your discretion in their use.

The Dimensions of some particular Trees at Flasby Hall, in Craven, Yorkshire, first taken in December, 1806; *with some Remarks thereon.* — Those on the house side of the water are chiefly growing on limestone diluvium; and those on the other side, on the shale beds of Flasby, which have been so ably elucidated by Professor Philips of York; and are the beds which contain the Ammonites figured by him in the second part of the *Geology of Yorkshire*; the debris of which is a strong yellow clay, covered with hazel loam of the same colour.

A wych elm (*Ulmus montàna*), near the south-west corner of the house, planted in 1789, 16 in. from ground, measured, in 1806, Dec. 1., 42 in. circumference; 1816, 64 in.; 1823, 70 in.; 1830, 80½ in.; 1836, Sept. 12., 86 in. This tree is upon a deep soil, advantageously situated for growth, one side open to the flower-garden. In 1823, one large branch was obliged to be cut off, comprising, probably, one third of the branches; and it is even now not above half covered over.

The beech near the approach road, planted in 1788, 3 ft. from ground, 1806, 21½ in.; 1816, 37½ in.; 1823, 46 in.; 1830, 55 in.; 1836, 65½ in. This tree is in the midst of others. The whole of the trees are selected, as those most likely to be left as standards eventually, and are all not very far from the house, or in its approach. This tree is just upon the edge of the singular sand and gravel bed upon which the house stands, on the angle formed by the bend of the valley changing north and

south to east and west. In this sand-bed have been discovered great quantities of human skeletons. The only bones hitherto discovered *in situ* are those of the water-rat, which prove it of alluvial origin, although it is upwards of nine yards thick, and 60 ft. above the water.

A beech near the last one particularised, 21 in. from ground, planted at the same time, in 1806, 21 in.; 1816, 34 in.; 1823, 44½ in.; 1830, 56⅔ in.; 1836, 68 in. Trees, in general, on the limestone diluvium of Craven, reach water within the yard. They grow well whilst young, therefore, but are not healthy when once they have touched the waters. On the limestone rocks there is seldom much soil; and, although dry, it is too solid to admit their roots. The ash, however, at the foot of these hills, where a greater depth of soil prevails, grows luxuriantly, and has been called the Craven oak.

The oak near the garden, planted in 1787, at 3 ft. from ground, in 1806, 16 in.; 1816, 28½ in.; 1823, 33½ in.; 1828, 39½ in.; 1830, 41¾ in.; 1836, 52 in. This oak is situated so near the level of the water, that it may probably partake, in some measure, of the debris of the shale which causes it to grow well; for I have observed that the oak never thrives well on the limestone, unless it happens to be near the shale bands which occur more or less through the whole great limestone formation; and a singular fact I should wish to mention here: — The common laurel (*Cérasus Laurocérasus*) could never be got to grow on the house side of the water; and, though it shot well when first planted, in a short time it as invariably cankered away and died. By carting a few loads of clay, we have got it to grow well, and have now some good specimens.

A larch near the last oak, at 4 ft., now cut down: in 1806, 34 in.; 1816, 39½ in.; 1823, 47½ in.; 1828, 49½ in. The last-named oak, situated so near this larch, had increased 6 in., whilst this tree made only 2 in. during the same period.

A larch in the drive to the house, planted in 1786: in 1830, 66 in.; 1836, 71½ in.

The following are all situated across the water: — A larch at the back of the lodge, planted in 1785: in 1830, 73 in.; 1836, 79½ in. These two last-named trees grow well: both are on the brook edge, upon alluvial gravel. Soil a fertile, light, sandy loam.

At the entrance from Meatherfield Foot, in the Low Wood, stand two wych elms on each side of the path, planted in 1787: at 4 ft. from ground, upper one, 1806, 26½ in.; 1816, 42 in.; 1830, 55¾ in.; 1836, 61½ in. Lower one, 1806, 23¼ in.; 1816, 39¼ in.; 1830, 50½ in.; 1836, 57 in. The wych elm, although indigenous to the soil here, does not appear, in general, to grow so well as on the limestone side; and, were it on the lime-

stone debris never to reach water, it would arrive at a great size. On the alluvial gravels in the vicinity it grows well. The elm, above all trees, once touching water, rots at the heart. All plants, in excessive droughts, shoot downwards after moisture; the next winter rains, raising the bottom level of the water, rot the lower fibres; and a great length of time is necessary for healing them again. It is upon this principle we have acted, by bruising, not cutting, in successfully destroying weeds very difficult to eradicate, such as equisetums and the two tussilagos. The larger one, with its enormous leaves, often invades our low meadows. A roller, applied in spring, when the plant is in vigorous sap, destroys it. This was discovered from observing that the plants were completely destroyed by the summer tread of cattle.

The oak, near the pond, close to the aged oak, planted in 1782, at one yard from ground, in 1806, 32¾ in.; 1816, 41 in.; 1830, 51¼ in.; 1836, 57 in. This oak is, of course, more or less affected by the superior strength of the old one in depriving it of nourishment. Probably, the death of trees under others is more caused from the greater vigour of the large one depriving the weaker of food, than shade. Seedlings soon die away unless of a different genera.

Another oak, which stands near the ditch from the pond to the cascade, planted in 1787, at one yard, measured, in 1806, 17½ ft.; 1816, 27½ ft.; 1830, 36¼ ft.; 1836, 41 ft.

The larch oak, at one yard, planted in 1782: 1806, 34½ ft.; 1816, 44½ ft.; 1830, 53¾ ft.; 1836, 60 ft. This oak, so named from its spiral growth, by Mr. Dixon, of Leith Walk, Edinburgh, who visited it on the day of the jubilee, 1809. The soil here is hazel loam, of good depth, on a flat, showing the shale beds to be soft above, and deep.

The corner oak, at one yard, and planted in 1787: 1806, 18 ft.; 1816, 31¼ ft.; 1830, 44¾ ft.; 1836, 54 ft. The average height of all these trees above the level of the sea is from 380 ft. to 390 ft. Most of the trees were two years old transplanted plants when first planted out.

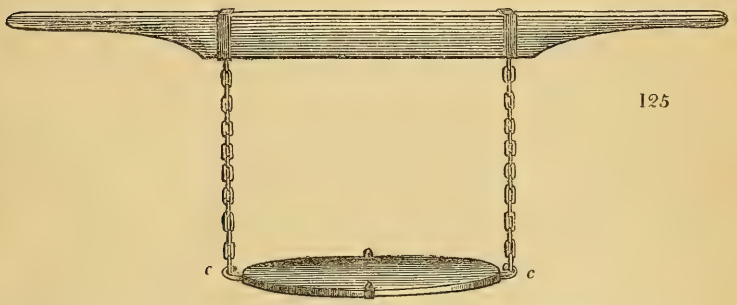
These notes, on the increase in size of trees, perhaps demand some short description of their locality. Craven is naturally a cold and wet country, from its elevation above the level of the sea, its contiguity to mountains, and, above all, its short grass, being wholly a grazing land. The effect of all this is a greater radiation into space, which tends to cool its atmosphere considerably. Flasby, the place from which these admeasurements are derived, is situated in the parish of Gargrave; and the approach commences immediately on crossing a bridge leading from that place over the Eshton brook. Bending on the right, is the Flasby brook, there flowing in a close wood before its junction at right angles with the other. This water is a clear trout stream,

passing over a rough stony bed. On leaving the thicket, a level plain appears, bounded nearly all round by woods; on the left the flat is covered with single trees planted in groups. Across the brook is a steep wooded bank, covered with some ancient oaks, thorns, hazels, &c. This bank, with the water at its foot, extends along the side of the road till it begins again to ascend, and which it does till it reaches the level of the house, during which space it is always enclosed in wood. On nearing the house, the road turns sharply to the right; when all at once the mountain Sharpah bursts upon the view, 2000 ft. above the level of the sea, with its expansive cove, from which the mountain takes its name; its broken ground, with its zones of different woods completely clothing its steep sides; the larch alone creeping in places towards the top, which is too exposed and elevated to allow the trees to attain their upright growth, they being there only dense shrubs, though quite old. The whole of this wood shows no fenced outline, and on that account encloses a considerable tract of open heath, which has become old and strong from the great number of years it has been unused. Amongst this, various exotics have been from time to time introduced in experimental patches, the particulars of which I could give you if desirable. A large portion of the lower part of the wood consists of indigenous oak and aged trees. The ground on the sides is very much broken with rock and deep ravines, down which the mountain torrents pour; and there are several most singular slips of several acres in extent, producing nearly flats on the mountain side. Two of these, which lie together, have been called dead eyes, with nose between, and brows above. The usual heaths of the north are common. Of rare plants, I have found Campánula *h*ederàcea near the top; and in the lower wood (for I forgot to mention that the first wood is half a mile or more from the commencement of the continuous ascent on the hill, a second valley or stream intervening) are found *O*'rchis bifòlia and Cypripèdium Calcèolus, though now become excessively rare; and in the meadows near the house, *O*`phrys muscífera and apífera. The floral arrangement here is various, by reason of three distinct formations; viz. mountain limestone, shale, and millstone grit, in addition to the great difference in elevation. From what I have written, it will appear that there must be much variety within a small compass; and that this place commands a fine outline of hill and rock, and that that hill is clothed with a strong contrast of colours, produced from the brown and purple of the heath when in flower. Above the wood, the light green of the larch, the blue green of the Scotch pine, and the massive round tops of the oak, intermix with the deep green of the alder, and elegant foliage of the birch. The situation of the hall, also, is good, backed as it is by plantations, and placed

upon a gentle declivity sloping to the south on an angle formed from the bend of a valley running east and west in front, and turning nearly north on the left; though on that side the valley is completely filled with wood. Such, then, is the picture I have been endeavouring to describe to you, and which, I trust, you will view some time or another; for I can assure you that you will find several fine mansions in the neighbourhood, well worthy of your notice.

ART. V. *Notice of the Wilton Shrub-lifter.* By its Inventor, HARRY ALCOCK.

IF you think the accompanying sketches (*figs.* 125. to 127.) worthy of a place in your Magazine, pray accept them as a trifling



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mite from one who has been gratified for many and many an hour by the perusal of your different valuable works for us country gentlemen.

I have called it the Wilton Shrub-lifter, from the name of this house; and my first reason for thinking of making it was, when superintending the removal of evergreens, &c., I observed

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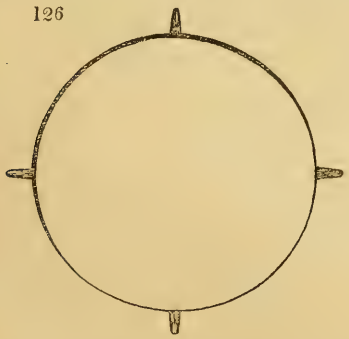
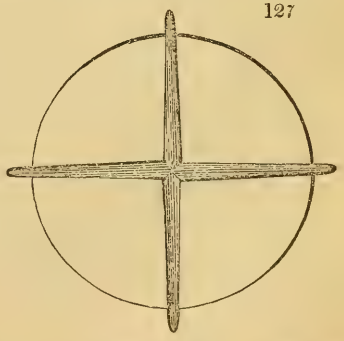


127



that half the men's time was lost in *trying to get the tree out of the hole*, after it was loose. Now, Sir, with the *lifter*, I can do as

much work with two men, and do it better than I could do before with six men; and my mode of operating is this: —

I cut a trench round the tree or shrub; then take the round part of the machine, *fig.* 126. (which is made of oak, like a very flat dinner plate, and crossed with strong iron on the under side, as represented in *fig.* 127.), first detaching the handles from their swivel hooks (*fig.* 125. *c*). Then, by inclining the tree a little on one side, I slip the machine under it, and let the tree fall into its own place, when, taking the choice of two opposite sides, where the branches are least in the way, we attach the two handles; and two men can *lift* the tree in a few seconds, without even putting a hand to the stem or branches.

Wilton, near Enniscorthy, Nov. 2. 1836.

ART. VI. *An Account of a Method of pruning ornamental Trees, chiefly Beech.* By J. W. B.

BEING aware of your desire to give publicity to any plan which seems to promise improvement, I have here forwarded to you an account of a method of pruning ornamental trees, chiefly beech, which has been adopted by John S. Enys, Esq., and executed, under his immediate superintendence, at Enys, near Penryn. Most of these trees were planted about forty years ago; and, from favourable circumstances of soil and shelter, were in a flourishing state of growth, and were from 16 in. to 20 in. in diameter, and perhaps 60 ft. high; but, in consequence of neglect, they had run up with several competing leaders. The best of these leaders was left; the others were shortened to one of the side branches about three years since. The tops cut off varied from 4 in. to 6 in. in diameter; and a stem was left from 10 ft. to 25 ft. long to its junction with the main trunk of the tree. The outer side was partly cut first, and the remainder was sawn from the inner side; so that the weight of the upper branches, aided by the leaves, as it was never done except in summer, snapped off the top without splintering.

The intended effect has been produced; viz., the selected leader has begun to assume the decided character of a main trunk; while the condemned leaders, whose growth has been checked in proportion to the amount of top taken off, have become large subordinate branches, headed by the side shoots which were left. It should be observed a sufficient quantity of branches must be left attached to the remaining stem to keep it in health, otherwise the defect of snag-pruning will not be avoided.

Although I have constantly passed under these trees since December, the marks of the pruning are so little visible, that I

have never observed them until pointed out to me by Mr. Enys; but I am so convinced that this method of cutting back large neglected trees is not only the most effective, but the least expensive, that I shall always practice it whenever I may have to direct the pruning of ornamental forest trees.

Art. VII. *Notice of the Mode of treating the more rare Species of the Pine and Fir Tribe.* By P. Frost, Gardener, Dropmore.

I now send you an account of the system we adopt in planting the different species of *Pinus*; particularly such as may be termed pot plants, and which have their roots coiled up into a ball. In the first instance, I shall describe the manner in which we prepare the ground for planting them; that is, by digging a hole from 12 ft. to 15 ft. in diameter, by 3 ft. deep, and carrying off the major part of the subsoil, which consits chiefly of gravel. To replace this, we bring a sixth part of bog earth, with a full half of scrapings and parings from the road sides, which are of a gritty substance; taking, at the same time, as much turf as possible; which is all incorporated together. The surface soil here is very light, rather peaty; and the whole, when mixed, is very light; and, by using a portion of the gravelly soil natural here, it never binds closely together, but remains open and kind. When the hole is ready, observing to keep it nearly a foot higher than the natural surface to allow for sinking, I extricate the plant from the pot, carefully drawing out every root, so as to get the whole ball loose, and not minding if every particle of soil drops. I then extend every root as regularly as possible; giving them a good watering before I cover them with soil, which causes the soil to adhere closely, and, I find, does much more good than watering when the roots are covered. I find all such plants as have been previously planted with the balls entire never resist wind, but are often destroyed by such careless planting. Those planted since I came here are, in general, growing much more luxuriantly than such as were previouly planted; and do not require the same care when exposed to high winds. I mostly use leaves with the surface mould, as I keep the better soil as deep as possible; and often make the soil better near the roots, by mixing up a wheelbarrow-full of leaves for planting in: I think it gives them a better start at first. The plants require to be tied up for a short time, till the ground gets settled; when there is no further care required, except occasional pruning, &c.

Dropmore, Sept. 1837.

ART. VIII. *List of Plants suitable for a Flower-Garden, which, it is found by Experience, are not liable to be eaten by Hares.* By P. FROST, Gardener, Dropmore.

THE following list of plants contains those which, when bedded out at Dropmore, are seldom gnawed or bitten by hares or rabbits, &c.; except those that are distinguished in the list by an asterisk, which are sometimes gnawed when newly planted. Newly planted things are more liable to injury than such as have been in the ground some time.

Tropæolum màjus flòre plèno.
*V*erbèna Sabini*àna*.
pulchélla.
* venòsa.
* *c*hamædrifòlia.
(*Melíndris*).
Bouvárd*ia* triphýlla.
* *H*eliotròpium sp.
Calceolària *s*alvifòlia.
thyrsiflòra.
rugòsa.
angustifòlia.
*Œ*nothèra macrocárpa.
*P*elargònium optábile.
Davey*ànum*.
pavónicum.
Black Prince.
Fairy Queen.
Scarlets in var.
Nierembérg*ia* calycìna.
*S*álvia *c*hamædrifòlia.
fúlgens.
Grâham*i*.
*S*enècio élegans.
Kaulfúss*ia* *a*mellòides.
Mahérn*ia* pinnàta.
Petùnia nyctaginiflòra.
*r*òsea.
præ*c*nitens.
phœnícea.
blánda.
*Mí*mulus *r*òseus.
Isótoma axillàris.
Alonsò*a* lineàris.
acutifòlia.
Cinerària *a*mellòides.
Fúchs*ia* globòsa.

ART. IX. *On some of the Advantages attending the Culture of Hardy Annuals.* By JOHN CAIE, Gardener to His Grace the Duke of Bedford, at Bedford Lodge, Cambden Hill.

THE regularity and neatness which constitute good keeping in the flower-garden, however desirable they may be in other respects, tend to do away with many of those invaluable plants called hardy annuals; because their reproduction from self-sowing cannot take effect when high keeping is adhered to. The suitableness of these annuals to the climate of this country, when sown in autumn, or permitted to sow themselves, is such as to render them truly useful; and their value was fully proved here in the spring of the present year. During the cold weather which prevailed at that season, not a few of the plants, the seeds of which were introduced into this country from North America by the late Mr. Douglas, were here apparently in their proper element. As soon as the cold weather ceased, they came into blossom, and made a brilliant display; a circumstance which goes far to prove not only their importance for an early show of flowers, but their adaptation for ornamenting borders of plantations; especially as many of them are not likely to be eaten by hares or rabbits. As we do not consider groups of such plants, when in a state of maturity and in seed, in character with the good keeping which

is necessary at an early period of the season in the flower-garden, it will be indispensably requisite to have a piece of ground set apart for the growth of such, where they will remain permanently; and which will prove a store-garden, to which the gardener may resort when plants are wanted to produce certain effects; such, for instance, as a show of flowers, previous to the summer-flowering plants coming into blossom. But, notwithstanding their suitableness for a spring show, many of them will continue flowering pretty well during the summer months.

The following list contains a few of the plants recommended: —

Œnothèra Lindley*àna*, purple.
álbicans, white.
decúmbens, purple.
vimínea, purple.
Clárk*ia* pulchélla, purple.
élegans, pinkish purple.
Gíl*ia* tricolor, whitish.
*a*chilleæf*òlia*, blue.
Màdia élegans, yellow.
Collòmia grandiflòra, pink.
Collòmia lineàris, red.
Nemóphila insígnis, blue.
Collíns*ia* grandiflòra, blue and white.
vérna, blue and purple.
bícolor, pinkish.
Leptosìphon densiflòrus, lilac.
*a*ndrosàceus, lilac.
Chrysèis (Eschschóltz*ia*) cròcea, orange.
califórnica, yellow.

Art. X. *Notice of some new, or little known, Sorts of culinary Vegetables, cultivated in the North Riding of Yorkshire.* By J. B. Whiting.

A kind of Celery is grown here, which is not noticed in the *Encyclopædia of Gardening*, and, probably, is unknown in the south; but its merit is so great, that it deserves general cultivation. It is called, here, the Flat-stalked; one of its distinguishing characters being the great breadth and flatness of its leafstalks, which are white, and perfectly solid. The leaves are large and spreading, pale green, with broader leaflets, and more obtuse serratures, than the common white.

In the spring of 1836, I received an excellent Lettuce, called the Asiatic Cabbage, from Messrs. Backhouse of York. It is not a very large lettuce; but it cabbages particularly well, and stands a long time without running to flower. The leaves are pale yellowish green. We have here another very superior cabbage-lettuce, seeds of which were received, some years ago, from the London Horticultural Society, under a French name. It is larger than the preceding sort, rather darker in colour, and the leaves are slightly speckled with brown.

We grow here a Broccoli, which frequently attains an enormous size. In 1835, I measured two heads, one of which was 1 ft. 11 in. across, and 3 ft. 1 in. in circumference; the other was 1 ft. 6 in. across, and 2 ft. 10 in. round. It is called Metcalf's Gray; having, as I understand, been originated by a gardener named Metcalf. In flavour, it is inferior to many other sorts.

The best broccoli I am acquainted with, for a gentleman's garden, is Knight's Protecting; the heads of which are compact, clear white in colour, and of excellent flavour. Being closely enveloped in the heart-leaves of the plant, the young heads are protected from late spring-frosts, by which other white varieties are often discoloured: it, however, is tender, the last severe winter having destroyed nearly all my plants. Seeds may be obtained from Messrs. Backhouse.

At the North Riding Horticultural Society's meeting (July 28.), some Beans were exhibited, which were greatly superior to any I ever saw. They were of a new sort, called New Long-pod, originally obtained from a London seed shop (Field and Child, I believe, is the name of the firm). The pods were straight, and well formed, each containing from seven to ten seeds. — *Kiplin, Sept.* 17.

ART. XI. *Critical Remarks on the Pot Culture of the Grape Vine.* By WILLIAM GREY, Gardener to Sir M. W. Ridley, Bart.

IN my correspondence, in last November, with Mr. Mearns, who was then gardener at Welbeck, he informed me that the three-years-old wood of the vine rooted more freely than wood of any other age; communicating, at the same time, several other interesting remarks on the vine, which induced me to give the pot culture of it another fair impartial trial, notwithstanding I had written against and condemned the system. I have a range of flued melon-pits here with four divisions: one of the divisions I prepared with tan, or spent bark, for the reception of thirty pots of coiled vines. In January last, I selected prunings; viz., white muscadine, Miller's Burgundy, black cluster, and black Hamburg; and, agreeably to the hints given by Mr. Mearns, I was careful of having the three-years-old wood coiled into the pots; the latter end of February being the time that the vines I had the cuttings taken from had taken their rest, and were coming into action. I then plunged the pots into the pit previously prepared for them, in a mild, growing, bottom heat; taking the sashes off all the day, to keep the shoots above the soil as cool as possible, in order to prevent the eyes from pushing until the bottom heat had put the wood coiled in the pots in action to push out roots and support the young shoots and branches. All went on to my wish; as I found, by the time the eyes broke forth into leaves, there were fine vigorous roots in the pots. I then kept the sashes on in the daytime, giving air the same as in forcing-houses: several of them showed fruit, with from four to eleven bunches upon one coiled shoot. The plants which were not fruitful, I took out of the pot, to give more room and light to those in fruit, and to satisfy myself in the argument

between Mr. Mearns and Philosopher, regarding the roots pushing only from the eye joints. It will be recollected that Mr. Mearns contended that roots issued more freely between the eye joints. I turned the barren plants out of the pots, and found Mr. Mearns had been perfectly correct, as there were plenty of vigorous roots between the eye joints, more so than from the eyes. I brought all my young men in the gardens to witness it, as they had read with great interest (in Paxton's *Horticultural Register*) the debate between Mr. Mearns and Philosopher; but were at a loss to know which was right, not having had an opportunity of seeing any proof of it before. Philosopher must submit to Mr. Mearns on that subject, as Mr. Mearns's observations must have been practical, and Philosopher's only imaginative.

The vines that had bunches on them I kept plunged in the tan-bed, where they set their fruit well. The berries swelled to a good size, according to the sorts; and they are now quite ripe; but I am certain not one of the bunches will be required at my master's table, as I have abundant crops, on established vines in borders, of the muscat of Alexandria, Frontignan, Hamburg, &c.; several of the bunches two and three pounds weight, and the berries the size of small plums. I would advise those who have not given the coiling system a trial, never to attempt it; as I am certain the best of success will be disappointment to the cultivator, and perhaps insults from the employer.

The shriveling of grape berries is very important. Several methods have been pointed out for its prevention; yet I never observed the malady decrease. Over-cropping a vine, a damp bottom, and the foliage being destroyed by red spider, certainly have a tendency to bringing on shriveling. My opinion, from practical observation, is, that light crops suffer most. If the flowers, when coming into blossom, do not expand over all the bunch in less than twenty-four hours (be the crop ever so light), that bunch will shrivel. When vines expand their blossoms in a lingering state, as a shoulder one day, the other shoulders the next day, and the extremity of the bunch the third day, such bunches are sure to shrivel, as the berries that set first begin to swell immediately, and so keep the lead. They form the seed stone before the last-set berries; and, when swelling off, and colouring to maturity, the first-set berries rob the last-set ones, and cause them to shrivel and decay. The best method I ever found to prevent shriveling is, to keep a high moist heat when the vines are coming into blossom, so as it may all expand at once; and, in thinning, to cut out all the small berries, leaving those on the bunch as near a size as possible. I will comment at greater length on shriveling in a future Number.

Blagdon, Northumberland, Sept. 13. 1837.

[We shall be most happy to receive this promised communication, as we consider the subject a very important one, and one that appears at present (notwithstanding the attention it has excited) to be very little understood.]

ART. XII. *On the Spot, or Canker, on Cucumbers.* By JOHN WIGHTON, Gardener at Cossey Hall.

THIS disease in cucumbers is occasioned by the beds being cold and damp, as the following observations will prove:—When the weather is sunny, and the beds warm, the plants will never be found thus diseased; but only when they become cold and damp. I have taken diseased plants out of damp beds, and placed them in a pit warmed by fire; and the plants soon returned to a healthy condition. Many gardeners consider plants diseased in this manner to be liable to infect others: this, however, is not the case; it is the bed, and not the plant, which communicates the disease. This I have proved by experiments; having put healthy plants in the same bed with those which were diseased, and found them speedily infected; whereas, when I had taken all the diseased plants out of a bed, and replaced them with healthy plants, these also quickly showed the disease. On the other hand, I have placed diseased plants beside healthy ones in a warm bed, and the latter remained uninfected. The soil does not cause the disease; for I have taken soil in which diseased plants had grown, and placed in it other plants: some of these I have put into a warm bed, and others into a bed from which the soil came. The result has been, that the plants in the cold damp bed soon showed the canker, but not the others. Many suppose light soil to be the cause of canker. This is so far true, as plants in light soil require more frequent watering; and this, in time, chills the beds. Canker follows, not, however, as a consequence of the soil, but of the cold.

The canker has never appeared in my pits heated by fires, except when I have given the plants much water, and when this has been followed by dull weather. It has uniformly disappeared after applying a little additional fire-heat. The real cause of canker is, that the dampness and coldness of the beds impede the growth of the plants, and cause them to break out in spots. If the beds were warmer and had less moisture, the tendency to ooze out and become diseased would go off with the growth of the plants. The disease is commonly found in low and damp situations; and I have seen much more of it since I have resided in Norfolk than I ever did before. With a view to ascertain its true cause, the foregoing experiments were made; there being much difference of opinion on the subject among gardeners. — *Cossey, Feb.* 10. 1837.

ART. XIII. *Floricultural and Botanical Notices on Kinds of Plants newly introduced into our Gardens, and that have originated in them, and on Kinds of Interest previously extant in them; supplementary to the latest Editions of the "Encyclopædia of Plants," and of the "Hortus Britannicus."*

Curtis's Botanical Magazine; in monthly numbers, each containing eight plates; 3*s.* 6*d.* coloured, 3*s.* plain. Edited by Sir William Jackson Hooker, LL.D., &c.

Edwards's Botanical Register; in monthly numbers, each containing eight plates; 4*s.* coloured, 3*s.* plain. Edited by Dr. Lindley, Professor of Botany in the London University.

Sweet's British Flower-Garden; in monthly numbers, each containing four plates; 3*s.* coloured, 2*s.* 3*d.* plain. Edited by David Don, Esq., Professor of Botany in King's College, &c.

Paxton's Magazine of Botany, and Register of Flowering Plants; in monthly numbers; large 8vo; 2*s.* 6*d.* each.

Bateman's Orchidàceæ of Mexico, &c.; in parts; imp. folio; 1*l.* 1*s.* 6d. each.

LEGUMINO'SÆ.

†1241. THERMO'PSIS 10,465 *fabàcea Dec.; Hook. Bot. Mag.*, 3611.
Synonymes: T. rhombifòlia *Rich.;* Thérmia rhombifòlia *Nutt.;* *Cýtisus* rhombifòlius *Pursh;* *Sophòra fabàcea Pall.*

"I think," says, Sir W. J. Hooker, "there can be little doubt of the correctness of the above synonymes. Now, that I have seen the living plant, I have no hesitation in referring it to the Thermópsis rhombifòlia of Dr. Richardson. Thus it appears to have a very extended range, being found in the north-eastern parts of Asia; and in north America, on both sides of the Rocky Mountains; but no where, as it appears, on the east side of that vast continent. It was introduced to this country through the Horticultural Society, having been sent by Mr. Douglas from dry channels of mountain torrents, in the valleys of the Cordilleras, near the Columbia River. It is cultivated in the greenhouse of the Glasgow Botanic Garden, where it flowers in May: but Dr. Lindley speaks of it as a good herbaceous plant, readily increased by the division of its creeping roots; and it will probably prove quite a hardy plant." The stem is herbaceous, erect, simple, or branched only upwards, somewhat angular, and quite glabrous below. The leaves are trifoliate, petiolate; leaflets obovate, approaching to rhomboid, distinctly veined; glabrous above, and slightly downy beneath. The raceme is composed of several yellow flowers, about the size of those of the laburnum. (*Bot. Mag.*, Oct.)

Rosàceæ § Potentílleæ.

3349. HORKE'LIA
*fúsca *Lindl.* dusky ♃ △ cu 2 jn.au W. Br. N. Amer. ... D co Bot. reg. 1997.

The plants of this genus are all erect and herbaceous, re-

sembling some potentillas in their general aspect; but with flowers collected into heads, unguiculate petals, a campanulate calyx, and 10 stamens, often with ovate petaloid filaments. They form a transition from *P*otentílla to the genus Sibbáld*ia*, and thus assist in establishing a graduated series of structure between the most highly developed forms of *R*osàceæ, and such imperfect forms as we find in Sanguisórbeæ. (*Bot. Reg.*, Oct.)

*Asclepiàd*eæ.

*PHILIBE'RT*IA* Kunth. THE PHILIBERTIA. (In honour of *M. Philibert*, author of an elementary Treatise on Botany.)
*grácilis *D. Don* slender ♄ △ el 6 jn Y.W. Buenos Ayres 1836 C s.l Swt. Br. fl.-gard. 403.

A perennial herb, clothed with soft spreading hairs. Stems filiform, twining. Leaves opposite, stalked, cordate, acuminate, soft; green on both sides; 1½ in. long; the posterior lobes rounded and spreading. The plant was raised by Dr. Neill of Canonmills from seeds collected by Mr. Tweedie between Buenos Ayres and Tucuman. The plant was kept all winter in a vinery, trained to a rafter, where it did not appear to suffer from being occasionally exposed to a little frost, very little fire having been employed. (*Swt. Br. Fl.-Gard.*, Oct.)

Scrophulárinæ.

3468. LOPHOSPE'RMUM [Swt. Br. fl.-gard. 401.
*scándens *D. Don* (*Lin. Trans.*, xv. 353.) climbing ♃ ⎽ or 10 jn.o P Mexico 1835 C s.l

A scandent perennial herb, clothed with soft, spreading, articulated, viscid hairs. Leaves alternate, stalked, cordate, acuminate, serrated, with broad mucronulate teeth, palminerved and reticulately veined; from 2 in. to 3 in. long, and from 1½ in. to 2 in. broad; dark green above, paler and less hairy beneath. Corolla funnel-shaped, 2 in. or more in length, of a dull purple, with the tube white on the under side.

"It is with no little satisfaction," says Professor Don, "that we present to our readers a figure of the original species of this highly ornamental genus." The plant was first introduced, in 1835, to the Liverpool Botanical Garden. In habit, it comes near to L. atrosanguíneum; and in the form of its flowers it is exactly intermediate between that species and L. erubéscens. (L. scándens *Bot. Mag.*, 3037. and 3038.; *Swt. Br. Fl.-Gard.* 68.) (*Swt. Br. Fl.-Gard.*, Oct.)

Verbenàceæ.

1755. PE'TREA [iv. p. 199.
*Stapelíæ Paxt. Stapelia-*flowered* ♃ ▭ or 20 jn L ? S. Amer. ... C r.m Pax. mag. of bot.

A twining stove shrub. Leaves oblong, rather acute; veins on the under surface, especially the principal, very prominent, rough on both sides, and of a yellowish-green colour. "When trained to the back wall of a stove trellis, or up a rafter, it is very ornamental, even though not in flower; but in a state of flowering, although the corolla is rather fugitive, it is, in consequence of the less fugacious nature of the calyx, and the pen-

dent habits of the racemes from the extremities of the branches, very graceful and beautiful for a long time. It delights in free loam, mixed with a little sandy peat; and cuttings in sand, under a glass, in heat, root freely." (*Paxt. Mag. of Bot.*, Oct.)

Orchidàceæ.

2547 DENDRO`BIUM 28526. ánceps *Lindl. Bot. Reg.*, 1239.
Synonyme: A'porum ánceps *Lindl.* in *Wall.*, No. 2020.; *Hook. Bot. Mag.*, 3608.

MACROCHI'LUS Fry*ànus* Knowl. & Westc.; *Gard. Mag.*, xiii. 457.
Synonyme: Miltò*nia* spectábilis *Lindl. Bot. Reg.*, 1992.

Named Miltò*nia*, in honour of Lord Fitzwilliam, by Dr. Lindley, who observes: "I had promulgated the name of Miltò*nia* spectábilis previously to hearing that Messrs. Knowles and Westcott had called the plant Macrochìlus Fry*ànus*; and, as the former name was published a month earlier, the latter will have to give way." (*Bot. Reg.*, Oct.) When we previously recorded this plant, in p. 457., we inadvertently referred to the *Flor. Cab.* for Sept., instead of the *Flor. Cab.* for Aug.

*CYNO'RCHIS *Thouars.* THE DOG ORCHIS. (From *kuón*, a dog, and *orchis*, an orchis.)
*fastigiàta *Lindl.* fastigiali ⁂ △ cu ¾ ap G.R Isle of France ?1835 R s.l Bot. reg. 1998.

"This is one of the representatives, in tropical countries, of the terrestrial orchises of Europe, growing in similar situations, and having knobby roots of the same kind. It occurs in damp places in the Isle of France, and has a smell very like that of the *O*'rchis máscula." (*Bot. Reg.*, Oct.)

2540. ONCI'DIUM [1835 D p.r.w Batem. Orch., t. i.
22677*a*. *leucochìlum *Batem.* white-lipped £ △ or 4 au.s W. and G. spotted with R Guatemala

O. leucochìlum appears to be not uncommon in Guatemala, where it was found by Mr. Skinner, and sent to Mr. Bateman in 1835, with whom it flowered in the autumn of the following year. (*Batem. Orch.*, Part I.)

[1836 D p.r.w Batem. Orchid., t. 3.
22688*a*. *Cavendish*ìànum* Batem. *The Duke of Devonshire's* £ △ or 4 ja Y. and G Guatemala

"This is a very handsome and distinct species of Oncídium; and we have, therefore, no hesitation in naming it after a nobleman whose devotion to botany and horticulture is now far too well known to render it necessary for us to enlarge upon it here. In a few years, we hope to see the beautiful family to which this plant belongs seated in all their natural majesty on those trees of which they are the proper 'incumbents,' and under the shelter of the great plant stove at Chatsworth. When this grand structure is completed, all the most striking vegetable forms of India, Africa, and America will be seen in, perhaps, more than their native luxuriance within its ample boundaries; and thus, amidst the wildest scenery of Derbyshire, there will be found an example of tropical vegetation, richer and more varied than could be met with in any of those baleful latitudes themselves.

"It will prove a very easy species to cultivate, and a very free flowerer; in which it seems to follow the example of O. lùridum; but it will, we fear, long continue a scarce plant, as it

grows very slowly, and seems indisposed to make more than one shoot in a year, or than one shoot at a time." (*Batem. Ochid.*, Part I.)

2530. CATASE'TUM [D p.r.w Batem. Ochid., t. 2.
*maculâtum *Kunth* spotted-*flowered* £ ⍁ or 3 ... G. spotted with P. New Grenada 1836

Originally discovered by Humboldt, near the town of Turbaco, in New Grenada (and at that time it was the only catasetum known); but Mr. Skinner, who met with it on the eastern coast of Nicaragua, has the merit of having introduced it into this country. "Nothing can be easier to cultivate than the different species of Catasetum: they flower profusely alike under damp or dry, under hot or cold, treatment; perhaps, however, they attain their greatest vigour if subjected during the summer to a powerful moist heat, with a plentiful supply of water; but in the winter they should be kept tolerably dry." (*Batem. Orchid.*, Part I.)

2530*a*. CYCNO'CHES [Batem. Orchid., t. 5.
*ventricòsum *Batem.* ventricose-*lipped* £ ⍁ or 2 ... G.W Guatemala ? 1835 D p.r.w

"The genus Cycnoches was founded by Professor Lindley, upon a remarkable plant from Surinam (C. Loddigesii), the sepals and petals of which bore as close a resemblance to the expanded wings of a swan, as did the column to the long arching neck of the same graceful bird; and these peculiarities are well expressed in the term Cycnoches (swan-neck). For upwards of four years, the genus had consisted of only a solitary species; when a second made its appearance in the person of C. ventricosum, which was discovered in the neighbourhood of Istapa, by Mr. Skinner." (*Batem. Orchid.*, Part I.)

REVIEWS.

ART. I. *Ladies' Botany; or, a familiar Introduction to the Study of the Natural System of Botany.* Vol. II. By John Lindley, Ph.D., F.R.S., &c., Professor of Botany in the University College, London.

AFTER the favourable reception which the public have given to the first volume of Dr. Lindley's *Ladies' Botany*, it having already gone through three editions, it seems unnecessary to say more respecting the second volume, than that it is executed on the same plan as the first. The number of letters in the first volume was 25; and the volume before us extends the number to 50. The plates are admirably executed, from original drawings; and the letterpress is so clear and perspicuous, that no person, from seeing it and referring to the plates, can have the slightest difficulty in making out the author's meaning. This work will do more towards diffusing a general taste for botany, and of that kind of knowledge of plants which consists in knowing something more of them than merely their names, than any other work that ever was published. It cannot be sufficiently

recommended to the young gardener; or to the parent who wishes to infuse into his children a kind of taste and knowledge, calculated, perhaps, to contribute more to their happiness than any other, in whatever station of life, or part of the world, they may be placed.

ART. II. *Icones Plantarum; or, Figures, with brief descriptive Characters and Remarks, of new or rare Plants, selected from the Author's Herbarium.* By Sir William Jackson Hooker, K.H., LL.D., F.R., A., and L.S., &c.; and Regius Professor of Botany in the University of Glasgow. Parts I. II. and III.; 14*s.* each. The Work to be completed with Part IV.

THIS work consists, as the title implies, of engravings of plants, with short technical characters and descriptive remarks. The engravings are lithographic, and they are very characteristically executed. The three parts published contain each 50 8vo plates, and 50 corresponding leaves of letterpress. The best idea of the kind of plants figured will be obtained from the following extract from the prospectus:—

"The rich collections, made in all parts of the world, which compose the author's herbarium, will insure an ample supply of subjects; among which, preference will, of course, be given to those that are most remarkable for their novelty, their structure, or their history; particularly from the vast treasures that have been sent to this country by Dr. Wallich and Dr. Wight, from the East Indies; by Colonel and Mrs. Walker, from Ceylon; by the Messrs. Cunningham, Baxter, Gann, and Lawrence, from Australia and New Zealand; by Messrs. Gillies, Tweedie, Cuming, Mathews, Bridges, &c., from South America; and by Messrs. Drummond, Douglas, and Tolmie, from the northern part of the New World; besides many collections of minor extent, but not of less importance, on account of the rarity of the species, from other celebrated botanists and travellers. An ardent desire to promote the cause of his favourite science has alone induced Sir W. J. Hooker to undertake this work, certainly not the expectation of any pecuniary advantage; for, even should the publication meet with the success that his fondest wishes might anticipate, yet the price set upon it is so low as to forbid any hope of profit."

There can be no question of this being one of the cheapest botanical works ever published, and, at the same time, one of the most original; as no plant is figured in it that has been figured elsewhere.

ART. III. *First annual Report, Laws, and Transactions of the Botanical Society of Edinburgh. Instituted March* 17. 1836. Pamph. 8vo, 53 pages. Edinburgh.

ONE of the characteristics of the present age is the formation of provincial societies for the promotion of science, and the interchange of ideas between persons of similar pursuits. The good

that will be effected by such associations, both to science and to society, is far greater than can be at present foreseen. That Edinburgh was ripe for something of this kind, is evident from the great number of resident members, of the greatest respectability, who have all enlisted themselves under its banners, since the commencement of the society, March 17. 1836. The original founders are Drs. Graham, Greville, Neill, Balfour, Barry, and Parnell; and David Falconer, Esq., of Carlowrie. Dr. Graham is President; W. H. Campbell, Esq., Secretary; and James M'Nab, Esq., Superintendent of the Experimental Garden, Curator. The following extract will show the general views and objects of the Society:—

"It is intended that the Society shall turn its attention to the whole range of botanical science, and such parts of other branches of natural history as are more immediately connected with it.

'It, is proposed to cultivate the knowledge of these,—

"1. By holding periodical meetings for the interchange of botanical information; for the reading of original papers, or translations, abstracts, or reviews of botanical works, regarding any branch of botanical knowledge, practical, physiological, or geographical; and the application of such knowledge to agriculture or the arts.

"2. By the formation in Edinburgh of an herbarium of foreign and British plants, and of a library and museum for general consultation and reference.

"3. By distributing annually amongst the members the duplicates received, and thus contributing to the formation of authenticated herbaria wherever the Society's correspondence extends, and affording to botanists at a distance opportunities of comparison and reference as accurate as are enjoyed by those having access to the herbarium in Edinburgh.

"4. By printing and distributing along with their collections of duplicates short annual reports, and inviting enquiries to doubtful questions.

"5. By printing, from time to time, catalogues of plants, with the view of facilitating the study of their geographical distribution, and furthering the principle of exchange.

"6. By making botanical excursions in the neighbourhood of Edinburgh, and to distant parts of Britain.

"7. By appointing local secretaries, from whom, in their respective districts, all information regarding the Society's objects and proceedings may be obtained."

ART. IV. *The Orchidaceæ of Mexico and Guatemala.* By James Bateman, Esq. Part I. Imp. folio. Ridgway and Sons, London, 1837.

WE have already (p. 224.) announced this work, and given some account of what it is intended to contain; and to this announcement, in the first place, we beg to refer our readers. We have been favoured by the publisher with a view of Part I., which may be described as by far the most splendid work of the kind ever published in this or any other country. The execution of the plates is not superior to some which have appeared

in the *Floral Cabinet:* for example, the Cattlèya Loddigèsii, in that work; but in Mr. Bateman's publication the plates are more than three times the size of those in the *Floral Cabinet*, being 2 ft. 6 in. long, by 1 ft. 10 in. broad. They are drawn on stone, and each is coloured with the same care and high finish as if it were an original drawing.

The titlepage has a border composed of Mexican ornaments, chiefly taken from antiquities in the British Museum, and from the splendid work of Lord Kingsborough, got up for His Lordship by our friend M. Aiglio, and of which only a very few copies were printed, and sold at one hundred guineas each. One thousand guineas a copy would not have repaid His Lordship, who ruined himself by this work, and died some time ago in prison. At the bottom of Mr. Bateman's titlepage, are five mountains in perspective rising from the sea, which are the arms of Guatemala; and at the top is an opuntia growing out of a rock, also rising from the sea, and surmounted by an eagle with expanded wings, holding a serpent with its beak and claws; which, our author informs us, are the arms of Mexico.

The introduction commences with the words "A few general remarks;" and respecting the initial letter A, the author has the following note:—"The initial letter is formed by the arms of Guatemala. The five mountains denote the five mountainous states into which that kingdom is divided: they are surmounted by a rainbow, under which is seen the 'cap of liberty.' We had intended the device to have served for an 'O;' but, when we came to collect our ideas, we could find none which began with that letter, so we were constrained to make it stand for an 'A,' for which, fortunately enough, it does equally well. The same arms (but without the 'cap of liberty') appear at the base of our frontispiece, at the top of which are placed an eagle and cactus, the arms of Mexico. The ornaments which make up the rest of the device are taken from Mexican monuments in the British Museum, or from the splendid work of Lord Kingsbury. We must except, however, the flower, which is seen in the centre of a square compartment on either side: this is the celebrated '*Fior de Lince*' of Hernandez, from whose work it is borrowed. That Mr. Brandard, who has the merit of having drawn the design, has accomplished his task with admirable skill, no one, we trust, will be disposed to deny."

In his introduction, the author notices the great extent of the species of this order, which was not even suspected till within the last few years; though orchideous epiphytes are mentioned in the following terms by Rumphius, in his chapter on the the Angræcums in the *Herbarium Amboinense*. His chapter opens with the following passage:—"Now come we to describe a noble family of plants, which is remarkable for having always

its dwelling aloft upon the branches of other trees, and which scorns the lowly ground; like the seats and castles of the great, which are usually built in elevated situations..... And, as nobility is distinguished by its appropriate and dignified attire, so this tribe of plants has a towering mode of growth, quite peculiar to itself." Hernandez, "the Pliny of New Spain," who flourished in 1650, dedicated one of the Orchidàceæ, as the loveliest plant of the Mexican flora, to the Lyncean Academicians of Rome; by whom it was immediately adopted as the peculiar emblem of their learned body. This Fior de Lince of Hernandez, Mr. Bateman thinks, was probably an anguloa; a genus which has been only recently introduced into Britain. Plumier paid great attention to the Orchidàceæ, and published good figures of many of the species. Linnæus was acquainted with 100 species; a fourth part of which, as they grew upon trees, he included in his genus Epidéndrum. "What would be the astonishment of that father of botany," exclaims Mr. Bateman, "could he now but behold his lovely epidendrum multiplied into 200 genera! and his 100 Orchidaceæ increased to 2000! Nay, what if he were assured that even our knowledge of the tribe was only in its infancy; and that, in all probability, not one half had been hitherto discovered! Dr. Lindley has already described upwards of 1000 in his Malaxideæ, Epidendreæ, and Vandeæ, to which a supplement of 500 might now be added; and, besides these, there are the Ophrydeæ, which will comprehend at least 500 more."

"Asia, Africa, and America will, perhaps, be found to divide the species of the order amongst them into three nearly equal proportions (for the few which Europe produces need scarcely be taken into the account); and the closer we approach the tropics, the more numerous and beautiful they become. Arrived, at length, within the precincts of the torrid zone, we find them no longer 'prone on the ground,' as heretofore, but conspicuous on the branches of the most rugged trees of the dampest and wildest forests, attracting the eye of the naturalist from afar, by the dazzling brilliancy of their colours, or arresting his attention by their delicious fragrance. And here we must take occasion to observe, that, although plants of this description are not unfrequently termed 'parasitic,' the epithet is altogether misapplied; for, while the parasites prey upon the vital juices of their victims, and perish with them, the 'epiphytes' derive nothing but their stay, or local habitation, from the plants on which they have established themselves; and continue to flourish and flower, indifferent whether their supporters live or die. The great majority of the Orchidaceæ of the tropics belong to the latter, or epiphytic, class; there are, however, a few that do not, as was long ago observed by the same ingenious Rumphius to whom we have already had occasion to advert. After noticing, in terms of due commendation, the dignified habits of most of the tribe, he proceeds, with a sigh, to remark that, 'among these vegetable nobles, just as among the nobles of mankind, some degenerate individuals are ever to be found, who are on the ground always, and seem to constitute a class of their own.' But it is not merely in their habits that the terrestrial species are placed below the epiphytes, they are also greatly inferior to them in singularity and beauty.

" The Orchidaceæ of each of the three great divisions of the globe have features of their own, so marked and peculiar, that, in most cases, a practised eye would have little difficulty in referring even a totally new form to its proper habitation. Thus, for example, the pendent stems and graceful flowers of many of the dendrobiums, ærides, and their allies, give a character of beauty and lightness to the orchidaceous flora of tropical India, which contrasts most strongly with the clumsy pseudobulbs of the bolbophyllums, or the long tails of the angræcums of Africa. Again, in America, the characteristic features are, the upright vegetation (as distinguished from the pendent) of the epidendrums, the long straggling flower-spikes of many of the oncidiums, and a much greater variety of grotesque and marvellous forms than is to be met with in any part of the Old World.

" The uses to which the plants of this family are applied are few; but, in several instances, highly romantic. In Demerara, that most dreadful of all poisons, the 'Wourali,' is thickened by the juice of the catasctums; and, in Amboyna, the true 'Elixir of Love,' is prepared from the minute farina-like seeds of the Grammatophyllum speciosum, which plant has just been received in England, in a living state, from Mr. Cumming. We tremble for the consequences, if what Rumphius says of its properties be true; asserting, as he does, 'Mulierem prosequi amore talem, a quo hanc farinam cum cibo, vel potu, accepit!' In Mexico, where the 'language of flowers' is understood by all, the Orchidaceæ seem to compose nearly the entire alphabet. Not an infant is baptised, not a marriage is celebrated, nor a funeral obsequy performed, at which the aid of these flowers is not called in by the sentimental natives, to assist the expression of their feelings. They are offered by the devotee at the shrine of his favourite saint; by the lover, at the feet of his mistress; and by the sorrowing survivor, at the grave of his friend; whether, in short, on fast days or feast days, on occasions of rejoicing, or in moments of distress, these flowers are sought for with an avidity which would seem to say that there was no sympathy like theirs;—thus 'Flor de los Santos,' 'Flor de Corpus,' 'Flor de los Muertos,' 'Flor de Maio,' 'No me Elvides' (or forget me not), are but a few names out of the many that might be cited to prove the high consideration in which our favourites are held in the New World. Nor are these the only honours that are paid to them; for Hernandez assures us that, in Mexico, the Indian chiefs set the very highest value on their blossoms, for the sake of their great beauty, strange figure, and delightful perfume; while, in the East Indies, if Rumphius is to be credited, the flowers themselves positively refuse to be worn, except by princesses or ladies of high rank. In Honduras, again, the large, hollow, cylindrical stalks of a fine species of Epidendrum are made into trumpets by the little boys and girls of the country; and the pseudobulbs of several of the more succulent species are used instead of resin for the strings of their guitars. The following are, however, almost the only known instances in which the tribe do any direct service to mankind. The bulbs of Maxillaria bicolor contain a large quantity of an insipid watery fluid, which is greedily sucked by the poor natives of Peru in the dry season. A fluid of a similar nature is obtained from what is probably a lælia in Mexico, and is administered as a cooling draught in fevers. From the roots of some of the orchises, even in Europe, the nutritive substance called 'salep' is obtained; in New Zealand, certain species are of considerable importance as esculents; and, in Guiana, the soles of the shoemaker are much indebted to the viscid matter obtained from the catasetums and cyrtopodiums, as are the poisoned arrows of the Indian. In this list the vanilla is not included, as that plant has recently been separated (no doubt, most judiciously) by Dr. Lindley from the natural order Orchidaceæ, and constituted the type of a new order of its own." (page 3.)

" If the Orchidaceæ have few uses," continues Mr. Bateman, " they yield us pleasure of an intellectual kind, and so intense

that it might attract the man of pleasure by its splendour; the virtuoso, by its rarity; and the man of science, by its novelty and extraordinary character." This, Mr. Bateman considers, will account for the Orchido-mania which now, he says, "pervades all, and especially the upper classes, to such a marvellous extent. It has extended," he continues, "to the Continent, and promises to rival in intensity the Haarlem mania for tulips."

The Orchido-mania is based, however, he adds, on a much better foundation than that for tulips; "for, while mere abstract beauty is all that could be alleged in favour of the one, full fifty good reasons may be brought forward to excuse, and even justify, the other." Of these reasons, the most attractive is the beauty of *Orchidàceæ*; their superiority in this respect, Mr. Bateman says, the most sceptical will allow, though our collections are still in their infancy; "but, when come to see in all their glory, and arranged in our stoves, with all the advantages of mutual contrast and luxuriant foliage, such plants as the Grammatophyllums and Saccolobiums of the Spice Islands! or the Dendrobiums of India!! or the Catleyas, Sobrateas, Stanhopeas, and Oncidiums of America!!! then, at least, all will admit that the eye never before rested on a mass of such surpassing loveliness; composed as it will be of an assemblage of flowers, each of which is considered the choicest ornament of the country where it spontaneously grows." In a note, Mr. Bateman adds: "Should there be any, especially among the softer sex, who may be disposed to cavil at the hard names which botanists have given to these plants, the fair objectors may adopt (if they prefer them), those by which they are known in their respective localities; such as the following, for example, which are the simple appellations of some of the finest of the Mexican species; viz.:—'Tzauhxilotl,' 'Amazauhtli,' 'Coatzonte coxochitl,' 'Chichiltic tepetlauhxochitl.'"

As to the fragrance of the *Orchidàceæ*, our author adds,—

"We question whether 'Araby the blest' can boast of any perfumes that can at all compete in sweetness with those exhaled by such plants as Angræcum odoratissimum *Lindl. MS.*, Tetrapeltis fragrans, Aerides odoratum, and Epidendrum aromaticum. Other species emit odours which remind the recipient of the smell of a druggist's shop (Stanhopea grandiflora), of the milk of the cocoa nut (Bolbophyllum coccineum), of fresh hay (Oncidium ornithorhynchum), of wallflowers (Acropera Loddigesii), of violets (Maxillaria atropurpurea), of pomatum (Aerides odoratum), of aniseed (Epidendrum anisatum), and angelica (E. umbellatum); of noyeau (Maxillaria crassifolia), of cinnamon (M. aromatica), of allspice (Gongora atropurpurea), of citron (Burlingtonia candida), of musk (Dendrobium moschatum), and of honey (Cycnoches Loddigesii). Some of these yield no fragrance, except in the daytime; but there are others which, like Epidendrum nocturnum and Brasavola nodosa, are aromatic only by night; and there are none, we believe, which are positively offensive at any hour either of the night or day."

The third of the "fifty good reasons" in favour of the Orchido-mania is, the generally long duration of the blossoms of this tribe; for, though the flowers of Stanhòpe*a*, Catasètum, and such genera, are of a fleeting nature, yet many of the Epidéndreæ retain their flower-spikes in perfection for weeks, and even for months, together. The remainder of the Introduction is to be continued in future parts.

The plants figured in Part I. are, 1. Oncídium leucochìlum, 2. Catasètum maculàtum, 3. Oncídium Cavendish*iànum*, 4. O. ornithorhýnchum (*Hort. Brit.*, No. 22683.), and, 5. Cycnòches ventricòsum, the details of which will be found in our *Floricultural Notices*, p. 506., appended to the letterpress. Of Oncídium leucochìlum is a vignette, representing the mountains of Istapa, exquisitely engraved by Mr. Branston, from a spirited sketch by J. U. Skinner, Esq., made while out at sea, in 1834. At the end of Catasètum maculàtum is a full-length portrait of the back of *B*látta gigantèa (the cockroach), taken from a specimen in the extensive cabinet of natural history belonging to Miss Charlotte Wilbraham of Rode Hall. The insect arrived in this country in a box of *O*rchidàceæ; upon which, judging from the condition of the plants, he must have made many a hearty meal. At the end of Oncídium Cavendish*iànum* is a front view of the same insect. Appended to the description on Oncídium ornithorhýnchum is the the front of a ruinous old ecclesiastical building, existing in a village about thirty leagues from the capital of Mexico, in which mass is occasionally performed.

It is a gratifying proof of the taste and spirit of the wealthy amateurs of plants in this country, that nearly 80 copies of this work are already subscribed for: the total number printed is only 120. Of course, this number can never repay the author; but, happily for him, repayment is but a minor consideration. He deserves, and will obtain, the higher meed of fame. The drawings are chiefly by Miss Drake, and they have been lithographed by Gauci.

ART. V. *New Works on Gardening, Agriculture, &c., published in Italy, during the Years* 1835 *and* 1836. Communicated by Signor G. MANETTI.

HERBARIUM Pedemontanum, &c. The Native Plants of Piedmont, arranged according to the Natural System; with some Exotic Plants, introduced under their respective Orders. Edited by A. Colla. Turin, June, 1836.

De Plantarum Amoribus, &c. The Loves of the Plants; an inaugural Discourse, pronounced by Dr. Joseph Pellegrino, &c., on his receiving the title of Doctor of Medicine. Padua, 1836; pp. 20.

Flora Medica, &c. A Description, with coloured figures, of all the Plants comprised in the Neapolitan Pharmacopœia; and of all the Plants used in

Medicine, Surgery, and Pharmacy, and for Drugs and Herbs, in the Kingdom of Sicily. Compiled by Dr. Stefano delle Chiage. Naples, 1835.

Dizionario del Bigattiare, &c. Dictionary of the Silk house; or, Observations on all the Modes adopted for cultivating the Mulberry Tree, and rearing the Silkworm; with practical Rules for the best and most economical Method, &c. Milan, 1836; 8vo, pp. 160.

Del Mal del Segiro, Calimacio, o Moscardino, &c. On the Diseases which affect Silkworms, and the Mode of curing them. By Dr. A. Bassi de Lodi, &c. Lodi, 1836; 8vo, pp. 62.

Breva Guida pel Governo dei Bacchi de Seta, &c. A short Guide for managing Silkworms, compiled by Lorenzo Molossi, and addressed to the Ladies of the State of Parma. Parma, 1836; 12mo, pp. 72.

Antonini Bertolomii, M.D., &c., Dissertatio de quibusdam novis Plantarum Specibus, &c. A Dissertation on some new Species of Plants, and on certain old Species. By Dr. Bertolomi. Bologna.

L'Agente in Campagna, &c. The Country Steward; or, Rules drawn from actual Experiments, for improving every kind of Agricultural Produce, adapted to the Soil of Italy. By G. A. Ferrario. 3d edit. Milan, 1836; 12mo, pp. 328.

Della indefinibile Durabilità della Vita nelle Bestie, &c. Of the undefinable Durability of the Lives of Cattle, &c.; with an Appendix of the Longevity of Plants. By C. A. Bellani of Monza. Milan, 1836; 8vo, pp. 104.

Cenni nella Naturazione delle Piante Antiche, &c. Hints on the Naturalisation of the useful Plants, and the Advantages to be derived from it in Domestic Economy and Medicine. By Antonio Vistarini. Pavia, 1836.

Elementi di Conchologia Linneana, &c. Elements of the Linnæan System of Conchology, illustrated by 28 plates. Translated from the English, with copious and erudite Notes by Professor C. G. Malacome. Milan, 1836; 8vo.

Plantæ quædam Ægypti ac Nubiæ, &c. Enumeration of the Plants of Egypt and Nubia, with Illustrations. By Dr. Robarts di Vissiani, Director of the Botanic Garden of the University of Padua. Padua, 1836; 8vo, pp. 44.

Antotrofia, &c. Antotrofia; or, the Cultivation of Flowers. By Antonio Piccioli, Botanic Gardener to the Museum of Natural History at Florence. Florence, 1835.

Dizionario portabile sui mezzi Pice efficaci, &c., a fugare principali Insecti ed Animali che avreia Damno all'Agricoltura, &c. Portable Dictionary of the best, most efficacious, and least expensive Modes of destroying or driving away the principal Insects and Animals which are found injurious in Agriculture and Domestic Economy. Compiled by A. Palmierj, Professor of Clinical Medico-Surgery at Foligno. Foligno, 1835.

Istruzione nella Cultivazione dei Gelsi e dei Bacchi da Seta, &c. Instructions as to the Cultivation of the Mulberry, and the rearing of Silkworms, addressed to a Peasant of Dalmatia. Zara, 1835.

Flora Medica, &c. An alphabetical and explanatory Catalogue of Medical Plants, described in the Italian Language. By Dr. A. Alberti. 2d edit. Milan, 1836.

Il buon Governo dei Bacchi da Seta, &c. The proper Mode of managing silkworms, exemplified by a Journal kept in a Silkhouse. By Count Dandolo. 3d edit., with copper-plates. Milan, 1836; 8vo.

Economia rustica per lo Regno di Napoli, &c. Rural Economy of the Kingdom of Naples, &c. By Luigi Granate, Regio Professor of Chemistry, Agriculture, &c., at Naples. Naples; large 8vo, pp. 388.

Calendario Georgico, &c. Georgical Calendar of the Royal Agricultural Society of Turin for the year 1836.

Della Coltivazione della Barbabietola, &c. On the Cultivation of the Beetroot, the Instructions of Matteo Bonafous, Director of the Agrarian School of Turin. Turin, 1836; 8vo.

Filosofia dei Fiori, &c. The Philosophy of Flowers. By Professor G. A.

Scazzola Alessandrino. Alexandria, 1836; 8vo, pp. 124. There are in this work 102 canzonets on the qualities and allegorical significations of various flowers.

Flora Comense, &c. The Flora of Como, disposed according to the System of Linnæus, by Professor G. Comolli, Imperial Royal Director of Licco, &c. Como, 1836. 16mo.

Guida dei Proprietani che dimorano in Campagna, &c. Guide for Proprietors, who reside in the Country, for the best Mode of managing their Estates; indicating what things it will most interesting for them to watch over in the course of the year; with meteorological Observations for regulating the farming operations to be performed in each month. Volterra, 1836; pp. 108.

Dell Ingrasso delle Vaccine, &c. On the Fattening of Cattle, practical Instructions by Pietro Onesti, experimental Farmer to the Agricultural Society at Roville. Florence, 1836; 8vo, pp. 24.

Salla Coltivazione del Colza, &c. On the Cultivation of the Colza, or Rape Seed, Memorial of Padre Angelo M. Vita. Cattamsetta, 1836; 18mo, pp. 10.

Scelte di Memorie Agroni, &c. Selection of original Agricultural Essays, and Extracts from those Works, which are of most Value to Italian and other Agriculturists. Bologna.

Trattato sopra la Coltivazione de' Gelsi, &c. Treatise on the Cultivation of the Mulberry. By Bartolomeo Lorenzi; to which is added an Eclogue on Silkworms, treated as a rural Pastoral. By the Abate Lorenzo Cuio. Milan, 1837; 8vo, pp. 64.

Trattato sulla Coltivazione, &c., del Luppolo, &c. Treatise on the Cultivation of the Hop; with a Method of preserving it, and retaining its Properties. By Signor Payen, Chevalier and Chappellet, Verona; with Additions and Notes by Signor Alberto Linneo Tagliabue. Milan, 1836; 8vo, pp. 122.

Periodicals, which are in part devoted to Agriculture. Emporio di utili Cognizioni. Emporium of useful Knowlege. Turin.

Repetorio d'Agricoltura, e di Scienzi economiche ed industriali. Repertory of Agriculture, and of the Sciences connected with Domestic Economy and Industry. Turin.

Archivii del Proprietorio, e dell'Agricoltore. Annals of territorial Economy and Agriculture. Piacenza.

Il Progresso delle Scienze, delle Lettere e delle Arti. Progress of the Sciences, Literature, and the Arts. Naples.

Continuazione degli Atti dell' I. R. Academie dei Georgophi, e Giornale Agrario Toscano. Continuation of the Transactions of the Imperial-Royal Academy of Agriculturists, and Journal of Tuscan Agriculture. Florence.

Giornale di Commercio, Arti, Agricoltura, e Industria. Journal of Commerce, Arts, Agriculture, and Industry. Rome.

Indicatore Pisano. Pisan Indicator. Pisa.

Giornale Agrario Lombardo-Veneto. Agricultural Journal of Lombardy and Venice. Milan.

ART. VI. *Salicetum, sive Salicum Formæ quæ hodie innotuere, descriptæ et systematice dispositæ.* Auct. M. Trautvetter. Petersburg, 1837.

THE first number of this work has just been published in Russia. The author divides the genus Salix into three principal groups: Pleiándræ, Monándræ, and Diándræ. The Pleiándræ have 3 or more stamens in each male flower; and occasionally, but rarely, fewer in the upper and lower flowers of a catkin. The

Monándræ have only one stamen in each male flower, which consists of two vessels closely united. The anthers are many-celled: the two are seldom distinct, and have their filaments constantly united for the whole length. The Diándræ have two stamens, and never more, in each male flower; the two filaments are joined together, but not so closely as to serve as a single pollen tube. In this first number, the author describes 30 sorts of willows, 17 of which belong to the Pleiándræ; namely, *S*àlix Bonpland*iàna H. B. et K.*, pentándra *L.*, Meyer*àna* W., *Sáfsaf* Forsk., falcàta *H. B. et K.*, Humbolt*iàna* W., nìgra *Marsh.*, Houston*iàna* Pursh, oxyphýlla *H. B. et K.*, undulàta *Ehrh.*, lanceolàta *Pm.*, triándra *L.*, *a*mygdálina *L.*, Villars*iàna* Flügge, andrógyna *Hoppe*, tetraspérma *Roxb.*, *c*oluteöìdes *Mirb.* The five following are doubtful: — *S.* cordàta *Mühl.*, rígida *Mühl.*, lùcida *Mühl.*, Pursh*iàna* Spreng., dùbia *Trautv.* To the Monándræ belong, *S.* Wilhelms*iàna* M. B., microstàchya *Turcz*, Lambert*iàna* Sm., purpùrea Sm., Ledebour*iàna* Trautv., *H*èlix *Sm.*, Koch*iàna* Trautv., and cáspica *Pall.* (*L'Echo du Monde Savant*, Sept. 9. 1837.)

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

Dry Rot.—We give the following paper, which has been circulated along with a lithographic engraving, for the sake of directing attention to the subject, and not as participating in the opinions of the writer. The lithographs represent two sections of the trunks of trees; the one of a tree which has been raised from seed on the spot without transplanting, and in which the annual rings are from a quarter of an inch to more than half an inch in diameter; and the other the section of a transplanted tree 100 years of age, in which the annual rings are from one sixteenth of an inch to three sixteenths of an inch in diameter. The author of the paper called upon us some months ago, and showed us the originals whence these sections were drawn, and several others, confirmatory, as he thinks, of the bad effects of transplanting and destroying the taproot.—*Cond.*

"What is the cause of the dry rot? The dry rot in trees is frequently a consequence of transplanting; because in removing them the taproot is destroyed, in which root is contained the honey or milk that is as indispensable to the growth of the tree as marrow is to that of the animal bone.—Is a seedling tree that has not been transplanted subject to dry rot? No.—Is a tree that has been tapped liable to dry rot? It is; for by tapping, you extract from the tree juices that are essential to its well-being.—How does a tree derive nourishment? Chiefly by means of the taproot, at the lower extremity of which there is a cup or bladder that bears some resemblance to the bowl into which the mercury descends at the foot of the barometer. During the winter months, the honey or milky substance is secured in this cup or bladder; but in the spring it ascends into the body of the tree, and insinuates itself through the different circles of which the trunk is composed. These are called *growth circles:* the circles formed by the sap are, by way of distinction, called *sap circles.* The age of the tree may be known by the number of growth circles; and by them also may be ascertained the four cardinal points; for in every tree the width of the circles in that part of the trunk which is

exposed to the north, is much less than in that part which is exposed to the south: it will also be found that the heart or pith is not in the centre of the trunk, but much nearer to the north than to the south side. By attending to this, Indians, who in extensive forests had lost their way, have in the absence of the sun been enabled to travel, as by compass: this, of course, was ascertained by cutting a young tree horizontally.—Do you consider the seed of a transplanted tree to be good? No; because it does not receive proper nourishment.—You said that a tree cannot be transplanted without injury to the taproot; is there a probability of injuring the tree in any other respect? Yes; great care should be taken place to the tree in the same relative position to north and south as that in which it originally stood: of this, Virgil writes,—

'Beside, to plant it as it was, they mark
The heav'n's four quarters on the tender bark,
And to the north or south restore the side
Which at their birth did heat or cold abide:
So strong is custom: such effects can use
In tender souls of pliant plants produce.' *Georgics*, ii. 362.

In what way do you ascertain whether timber, either standing or felled, has dry rot? By boring about half an inch in diameter into the heart of the tree: this, however, to prevent injury, should be done near the but end.—*William Dupe, Gunmaker. Oxford*, 1837."

Uses of Garlic.—According to the Chinese physicians, this root possesses the faculty of renovating exhausted constitutions; giving fresh vigour; raising the drooping moral and physical faculties; and restoring to health and *embonpoint* the victim of debauchery. It is also said that a bit of the root, chewed by a man running a race, will prevent his competitor from getting the start of him. It is somewhat singular that the same property is attributed to garlic when given to horses; and the Hungarian jockeys frequently tie a clove of it to their racers' bits, when the horses that run against them fall back the moment they breathe the offensive odour. It has been proved that no horse will eat in a manger if the mouth of any other steed in the stable has been rubbed with the juice of this plant. I had occasion to ascertain this fact. A horse of mine was in the same stall with one belonging to a brother officer: mine fell away, and refused his food; while his companion throve uncommonly well. I at last discovered that a German groom, who had charge of the prosperous animal, had recourse to this vile stratagem. It is also supposed that men who eat garlic knock up, upon a march, the soldiers who have not made use of it. Hence, in the old regulations of the French armies, there existed an order to prohibit the use of garlic when troops were on a march." (*Millengen's Curiosities of Medical Experience. Lit. Gaz.*, Jan. 28. 1837.)

New esculent Sea-Weed.—At a recent meeting of the Medico-Botanical Society, a paper was read by Dr. Sigmond, respecting a new esculent seaweed, which possesses nutritious properties to a much greater extent than Iceland moss, without any of the bitter principle which renders that plant so disagreeable to many. This fucus, of which specimens have lately been brought from Calcutta, is said to contain 54 parts of starch in 100, and to be employed in large quantities by the Chinese, who form with it an agreeable and refreshing jelly. It is abundant in the neighbourhood of Ceylon, and has been much employed by the medical profession in Calcutta. The jelly is said to be quite equal to *blanc manger*. (*Edinb. Journ. of Nat. Hist.*, Aug., 1837.)

Retaining and absorbing Heat in the open Ground.—Gardeners may find it desirable to bring forward a favourite plant in the open border by extra heat in the soil, and by liquid manure; and for this purpose the following extract from an excellent work (*Matthew on Naval Timber*) affords a useful hint:—"In cases where, from the moistness and coldness of the ground in early summer, there was a torpor in the action of the roots, and, in consequence, the developing leaves have withered up under an arid atmosphere, we have attempted to stimulate the root to action by the application of warm water,

covering up the surface of the ground with dry litter, to confine the heat; we have also endeavoured to encourage the root action by increasing the temperature of cold light-coloured soils, by strewing soot on the surface for a yard or two around the plant, and by nearly covering a like distance by pieces of black trap rock, from 3 in. to 6 in. in diameter. The success from the pieces of trap appeared greatest: they diminished the evaporation from the ground, and thence there is less loss of heat, and of necessary moisture; and, being at once very receptive of radiant caloric, and a good conductor, they quickly raised the temperature of the soil in the first half of the summer, when bodies, from the increasing power of the sun, are receiving much more heat from it than they are giving out by radiation." (*Matthew on Naval Timber*, p. 39.) Those who cannot command soot or trap rock may use coal dross, or pieces of coal, laying them close together all round the plant. Roses may be brought earlier into bloom in this way; and we have produced an extraordinary rapidity and vigour of growth by the same means, with the addition of liquid manure, in the Siberian cow parsnep (*Heraclèum* gigantèum). — *Cond.*

Powerful Antiseptic. — Professor Hare of Philadelphia has obtained, by distilling oil of turpentine with two parts of alcohol, and four parts of sulphuric acid, a liquor which, when saturated with ammonia and purified by a second distillation, possesses an antiseptic power superior to that of creosote. Thus, one part of milk, mixed with four parts of a solution of sulphuretted oil of turpentine in water, was sweet and pure after the lapse of five days, whilst another portion of the same milk turned sour in twenty-four hours. Two drops of the oil itself, when dropped into a quart of milk, prevented its coagulation for nine days; and, although it did finally curdle, it yet remained sweet at the end of a month. Two pieces of meat were preserved in the same manner for several months. Many other substances have been preserved in the same manner. (*L'E'cho du Monde Savant*, Aug. 30. 1837.)

Art. II. *Foreign Notices.*

FRANCE.

Improvement of Agriculture. — A sum of 500,000 francs is about to be placed at the disposition of the Minister of Public Works, for the advancement of agriculture, in 1838. This amount, which is the largest that has ever been allowed, is another proof of the interest which is every day attached to the progress of this art. (*L'E'cho du Monde Savant*, Aug. 12. 1837.)

Remarkable Oak and Beech.—At Cambanière, in the Forest of Hautanibout, Black Mountain, there is a tree presenting a very remarkable phenomenon. An oak and a beech have grown so close together, that their trunks appear as one; and the head is composed of branches, some having the foliage of the oak, and others that of the beech. (*Ibid*)

Bollwyller, Département du Haut Rhin, Sept. 30. 1837. — I send you our priced *Catalogue of hardy Trees and Shrubs* for insertion in your *Arboretum Britannicum*, on the terms proposed on the wrapper of the Number of that work, and of the *Gardeners' Magazine* for November, 1836; but I wish you state to your readers that this catalogue does not contain the whole of our collection, but only such plants as we have propagated in quantities. We have a great number of species and varieties of which we have only a few plants, and some of which we have only one plant; but of all these we shall have plants for sale in a year or two. You ask the extent of our nursery, &c. It contains 125 acres (50 hectares); and we employ, on an average throughout the year, 150 men. We have above 100 sashes of green-house, besides several hundred feet of pits in frames, all used in propagation. Among our newest articles, is a seedling *Rhododéndron* arbòreum, a hybrid between that plant and Azàlea índica álba. It has not yet flowered, but we have great expectations from it. Its leaves are very remarkable, and I hope its flowers will not be less so. — *Napoléon Baumann.*

GERMANY.

Botanic Garden, Berlin. Sept. 27. 1837. — Among the hardy trees and shrubs received here within the last few years are, *A*lnus subcordàta, barbàta; *P*ópulus *l*aurifòlia; *Q*uércus Thómasi, brùtia; *P*ìnus brùtia; *A*cer neapolitànum, Lonícer*a* Ledebouriàna, *P*rùnus *Maraskìno*, *C*órylus mongólica, Pterocárpa caucásica, *A*cer ibéricum, and others.

The dimensions of the palm-house in the Island of Peacocks are, length, 110 ft.; height, 42 ft.; and width 40 ft.

M. Lenné has purchased part of M. Parmentier's collection of palms at Enghein for 24,000 francs. The Theophrást*a* Jussieùi flowered at the Island of Peacocks, I believe for the first time in Germany. The plant was also bought of M. Parmentier. — *E. Otto.*

Frankfort, Aug. 21. 1837. — Our flower show, in May last, was splendid. There were enormous plants of *R*hododéndron arbòreum hýbridum, and Azàlea índica, in great varieties. We had there, also, an extremely fine Telòpea speciosíssima in flower, which has now set three beautiful and perfect fruits, the first in Europe I have heard of. The plant is in a most vigorous state, the leading branch having shot up more than 2 ft. since June, and being nearly half an inch thick. It promises to flower again next year. — *J. Rinz, jun.*

Art. III. *Domestic Notices.*

ENGLAND.

A Zoological and Botanical Garden is about to be established at Leeds, 20 acres of ground being already purchased for that purpose. We are happy to see such a spirited example, which we hope will be followed by degrees till every town, and even village, in the kingdom has a public garden or promenade of some sort. — *Cond.*

A proposed Botanic Garden at Newcastle on Tyne. — My object in writing to you at present is, to say that a course of lectures, recently delivered at the Philosophical Institution of this town by Sir William Jackson Hooker of Glasgow, has given rise to, or rather has *renewed*, a strong feeling towards the establishment of a Botanic Garden. It is thought that 7, 8, or 9 acres might be had within a mile or a mile and half from the town, on moderate terms, probably for 1000*l.* or 1500*l.* The circumstance of the cost of some botanic gardens which have been established having amounted to 10,000*l.* or 12,000*l.* almost deters us from the project, as beyond our reach, as we have many other public institutions already in the field. Now, I would take it as a very particular favour if you could form a rough idea of what sum you think would be a reasonable minimum, in order to invite public attention; that is to say, over and above the purchase of the ground, what extent in acres, and what probable cost of erections, planting, &c., would be likely to afford sufficient interest for a Botanic Garden (zoology, at present, I fear we dare not attempt). Of course, much depends on soil, situation, and formation; but, if a spot which Sir W. J. Hooker saw and approved of is adopted, nature has done so much, that art can easily be superadded. It is a dean, or glen, one mile and a half distant from Newcastle; a fine *haugh*, or flat alluvial soil, with a rocky stream, a mill, and hanging banks of magnificent foliage with a table-land above. If the design goes on, I hope to have the pleasure of sending you a plan and section of the site. In the mean time, the favourof a few lines from you may probably be of great use in promoting the scheme, though I know that it is unreasonable to trespass on your time. — *T. S. Newcastle on Tyne, September* 25. 1837.

To the above letter the following answer was returned: — " I am delighted to find, by your letter of the 25th inst., that there is a strong feeling towards the establishment of a Botanic Garden at Newcastle; and I most sincerely hope that this feeling may be speedily realised. With respect to the cost, a

great part of the sum expended in the case of such gardens as Liverpool and Manchester was employed in building boundary walls and constructing hot-houses. Where economy is an object, I would recommend a double hedge instead of a wall; an outer hedge of thorn, and an inner one of holly, the ground being thoroughly trenched and manured to the depth of 6 ft. If this were done, and thorn plants employed with stems as thick as a man's thumb, cut down to the ground the second year (not the first, as is usually done), a fence would be produced in 4 or 5 years, and which in 7 years would be altogether impenetrable to man, or to any description of animal. In the mean time, while the hedge was advancing, the interior of the garden could be drained, laid out, thoroughly trenched, and manured, and all the trees and shrubs required, planted. If this were properly done, you would have a most interesting, ornamental, and useful garden, even without hot-houses; but it should be laid out in such a manner as to provide a place for hot-houses, which might be erected at any time that the state of the funds may render it convenient. As both coal and glass are cheap at Newcastle, you might, at some future time, cover an acre of ground with a glass roof, raised on pillars of such a height as to admit of growing under it the trees of tropical climates, to such a size as would give some idea of the dimensions and appearance they attain in their native countries. This, I think, would be much better than growing thousands of plants in small pots, which you could have nurserymen to do. It would, besides, give your hot-houses a character of originality. I would not recommend uniting a Zoological with a Botanical and Horticultural Garden; and I would rather confine the latter, in the first instance, to such plants and trees, useful and ornamental, as are quite hardy, leaving the curious and the tender plants for future introduction. You should have a complete collection of hardy fruit trees; another of hardy ornamental trees and shrubs; and one of hardy herbaceous plants; besides which, you should grow specimens of all the plants used in British agriculture, and the hardy plants used in the arts and manufactures, medicine, &c. All this you might do, to a very great extent, without any hot-houses whatever; and at an expense which, I should think, would not amount to 1000*l.* a year. The first cost of draining, laying out, trenching, enclosing, &c., you could ascertain to a certainty from any local gardener or nurseryman.

" If you can lay your hands on the *Gardener's Magazine*, Vol. VIII., for 1832, and turn to p. 410., you will there find a plan for the Birmingham Botanic Garden; and, if you have leisure to peruse the article, it will give you some idea of what may be accomplished both with and without hot-houses.

" I am sorry that, at the distance I live, I can be of no manner of use in suggesting ideas for laying out the garden, except in a general way; because, wherever the surface is uneven, it is absolutely necessary that the person who is to make the design should see the ground. — *L.*"

Pisum sp. (See p. 379.) — Referring to the paragraph, p. 379. of your correspondent Thomas Brown, I beg to inform you that, in the spring of 1835, some horsebeans were purchased in the adjoining market town, and amongst them were a few peas, of which notice was not taken; but, somehow or other, they got planted with the beans. In the following summer, the peas attracted my notice, and, upon examining them and tasting them, I thought they were essentially different from the ordinary field pea. They were much larger, differently shaped, and much sweeter; and I therefore myself gathered a few of them with the intention of sowing them with the next crop of beans to furnish binders for the sheaves; a practice in general use in Yorkshire. The stalk, or haulm, of the pea is from 6 ft. to 8 ft. long, very strong, and therefore well calculated for a binder.

Last February, the beans were dibbled in the usual manner; and, just as they showed themselves above ground, some peas were dibbled between the rows for the purpose above stated. When the beans were in cutting, a woman was employed to draw out the pea-stalks, strip the pods off, and lay the haulm in order for binders. The peas were very fine, excellent to eat as scalded peas, which you probably have tasted and relished; though the labourers here would

not touch them. The haulm was very long and strong, and all the sheaves were bound with it. The practice here is either to bind with straw, or to take three stalks of beans. In the latter case, the beans growing on those stalks are lost and wasted.

Now, Sir, I am ready to furnish you or Mr. Brown with a specimen of the peas; and if, on inspection, they appear to be what he enquires after, I should with pleasure send you all I have; keeping only a sufficient quantity for sowing next year.

I am no farmer now, but I think the pea would not answer to cultivate as a crop; as, on account of the length of the haulm, I should think it would rot, and the peas also, if it had not some support to raise it above the ground, which, when planted with the beans, my peas had; for they laid hold of the bean-stalks, and passed from one stalk to another, and thereby were kept from the ground. — *A Gentleman residing in Berkshire. August* 21. 1837.

[We have since received about a quart of the peas referred to by our correspondent, and those who wish to try them may apply by letter, post paid, to Mr. Charlwood, seedsman, London; Mr. Lawson, Edinburgh; or M. Vilmorin, Paris; to whom we have sent equal portions of the seeds. — *Cond.*]

*Cowàn*ia *plicàta.* — This beautiful new shrub, mentioned p. 452. is, we understand from Mr. Blair, extremely difficult to propagate, and by no means likely to become common for many years.

Agàve americàna. — We understand that the fine specimen of this magnificent exotic in the ladies' flower-garden at Clowance, the seat of Sir John St. Aubyn, Bart., is now in a state of blossoming, and upwards of 200 of the flowers are expanded; and so richly are these blossoms supplied with honey, that it actually drops from them. From the vast number of flower buds, there is no doubt but this most curious and interesting flower will continue in bloom for the space of five or six weeks. No fewer than 1360 persons have already seen and admired this most beautiful plant, and we have every reason to believe many hundreds more will be added to the number. (*West Briton*, October 6. 1837.)

SCOTLAND.

A Gardener's Lodge, in a first-rate place, in Scotland, when I was a young man, was more like a school than a lodge. In the evening, the young gardeners would study (principally from books), by their own exertions, grammar, arithmetic, geometry, trigonometry, land-surveying, mapping, mensuration, horticulture, botany, garden architecture, and geography. It was customary for the head or principal gardener to attend in the lodge for an hour or two in the evening, to teach the apprentices and junior men. Thus, their time in the evenings was spent in study, until they obtained good situations. (*Shepherd's Lectures on Landscape-Gardening in Australia;* 8vo. Sydney, 1836.)

Heating by Hot Water at Altyre, near Forres, in Elginshire. — The Shots Iron Company are at present fitting up four hot-houses, each between 40 ft. and 50 ft. long, with hot-water apparatus, for me; and all my neighbours are following my example. The steady heat, and the cleanliness and comfort, of the hot-water apparatus will induce many here to erect hot-houses who never thought of doing so before; and will thus give a great stimulus to the forcing and exotic departments of gardening in this part of the island. — *C. L. C. B. Forres, Nov.* 12. 1836.

New Seedling Potato. — Owing to the partial failure of the potato crop for several years past, it became an object of importance to try experiments with the view of restoring the constitutional vigour of that valuable esculent. Last year, Mr. Arthur, gardener at North Berwick Lodge, noticing a field of thriving potatoes, of sorts, in his neighbourhood, bestowed considerable pains in crossing the strongest and most approved varieties in the field, and afterwards carefully collected the seed. The seed thus collected was sown early this season; and the plants produced were in due season transferred to new ground, on which potatoes had never before been grown. The crop, which covers more than a quarter of an acre, has the most promising appearance, the stems being

nearly as strong as the best fields in the neighbourhood, grown from sets. From the pretty extensive scale on which the experiment has been made, and the scientific manner in which it has been conducted, it seems well deserving the attention of the agriculturist, as a great number of new and important varieties may be obtained, no two stems exhibiting the same characteristics. (*Edinburgh Evening Courant*, Aug, 17. 1837.) [We trust our correspondent, Mr. Arthur, will not forget the readers of the *Gardener's Magazine*, when he has matured his experiments, and fixed on some varieties that he thinks deserving of general cultivation. — *Cond.*]

Art. IV. *Retrospective Criticism.*

Sweet's British Flower-Garden. — You have recorded, at p. 431., *Lupìnus* versícolor *Lindl., Bot. Reg.*, 1979., from Califórnia, ?1831, as a new species. There was a *Lupìnus* versícolor *Swt.* figured in the *British Flower-Garden* for August, 1829, n. s., 12., said to be introduced from Mexico in 1828; which is also in your *Hortus Britannicus*, p. 486., and also recorded in the *Gardener's Magazine*, Vol. V. p. 524. and 614. Sweet's plant, I presume, has proved to be identical with some previously described species, and his name, consequently, abandoned. What species is it? If not so, it must have been an oversight to apply the same twice to two different species. Although not, perhaps, admissible, I may mention having seen, in another work lately, under the head of Floricultural Notices, Desmòdium canadénse *Dec.*, stated to be a newly introduced shrub. Upon referring to your *Hortus Britannicus*, I find it is perennial, and was introduced in 1640. The plant has long been cultivated in gardens as *Hedýsarum* canadénse *L.* In another work of this month, I see that Messrs. Rollison of Tooting have Cephalánthus occidentàle flowering in the stove. In your *Hortus Britannicus*, it is marked as a hardy shrub, and I believe you are correct; at least, I have never seen it treated otherwise. In the work first alluded to, there is a notice of a new orchideous plant having flowered, which is called Miltòn*ia* spectábilis; but it does not state that the same plant had been previously figured and described for Macrochìlus Fry*ànus*. These are errors which do not affect you, not being in any of your works; but they certainly lead to confusion, and ought to be corrected. — *E. B. Sept.* 5. 1837.

Thùja articulàta. — The following has been sent us by a correspondent: — "Amongst the extracts we have made at various times from the work of Captain Cook in Spain, we have omitted to mention the interesting facts brought to light by him respecting the woodwork of the celebrated mosque, now the cathedral of Cordova. This edifice, the most considerable ever erected by the Mahommedans, was built in the ninth century; and, being intended to represent Mecca in the western portion of their dominions, no pains or expense were spared to render it worthy the rank it was designed to hold. On examining the roof, it was found that the parts of the original woodwork to which the water had not penetrated (a casualty to which the mode of construction made it too liable) were perfectly preserved, the carving with which they had been ornamented remaining uninjured. It was naturally an object of interest to ascertain, if possible, the species of tree which produced timber with such remarkable properties of durability. The only information to be obtained on the spot was the common report, which has been copied from book to book, that it was the produce of the larch, and that forests of this tree formerly existed in the neighbourhood. The only foundation for this idle story is the resemblance of the Spanish word alerce to the Latin larix, from which we derive the English larch. Not a shadow of proof, or even a rational ground for conjecture, can be adduced, that this tree ever existed in any part of Spain, much less in the vicinity of Cordova, the locality of which is in every respect singularly unsuited to it. After carefully examining the wood in question, and comparing it with that of the alhambra, the alcaza, or royal palace of Seville, and other remains of the

Moors in Andalusia, the roofs of which are of the *Pìnus Pínea*, or stone pine, once extensively grown in Andalusia, the author came to the conclusion that the origin of the timber of the mosque must be sought elsewhere, and that it was not of any Spanish, or even European, tree.

"By a singular coincidence, the subject had been undergoing investigation about the same time in Africa itself. Mr. Drummond Hay, the British Consul at Tangiers, had, by tracing the Arabic etymology of the word alerce, by availing himself, we believe, of the extensive botanical researches of the late M. Schawboe, the Danish consul in Morocco, and by collating the accounts of the resident Moors, made out that the alerce, was the *Thùja* articulàta, a tree which grows on the Atlas in the vicinity Tangiers. In corroboration of his views, a plant of the timber in question was transmitted to London. This plant, which is still at the rooms of the Horticultural Society in Regent Street, is 20 in. in diameter; and we are authorised by Captain Cook to say, that it not only agrees with the parts of the timber of the mosque at Cordova, which he examined, but that he is perfectly satisfied of the identity. It is highly balsamic and odoriferous; the resin, no doubt, preventing the ravages of insects, as well as the influence of the air. There is reason to believe that it was the sandarac of the Orientals, and that this species was employed, where it could be procured, in the construction of their religious edifices.

"Our chief reason for giving a notice of this interesting and remarkable tree is the hope that, by the assistance of our friends or correspondents, we may be enabled, by seeds or by plants, to see its addition to the British arboretum. We know no reason to apprehend that the species, which belongs to the Conìferæ, and is nearly allied to the Italian cypress, and the juniper of the south of Europe, should not be as hardy as its congeners, which are natives of similar latitudes, and which grow as well in the warmer parts of England as in the south of Europe. We are ardently desirous of its introduction, not only from its historical interest, but from its value in an economical point of view."

Jasmìnum odoratíssimum Arb. Brit., p. 1252. — The gelsomino di Goa, called in your *Arboretum Britannicum* by the scientific name of *Jasmìnum* odoratíssimum, is the *J. Sámbac* var. trifoliàtum of your *Encyclopædia of Plants*. The Grand Duke of Tuscany, Cosmo III., in 1689, sent for ten or twelve boxes of this plant from Goa; and amongst them were found the two varieties of mugherino, one of which has a semi-double flower, and the other a double flower. The mugherino with a simple flower, called the gelsomina del Gimè, and, by the Genoese, gemetta, was the first known. Both the first and the second varieties are described by Tilli in the *Orto Pisano;* the first (in p. 87. t. 31.), "Jasminium sive Sambac Arabum, folio accuminato, flore stellato, majore, albo, odoratissimo, vulgo mugherino;" the second (p. 87. t. 30.), "Jasminium Indicum Mali aurantiæ foliis, flore albo pleno, amplissimo." The second variety is called, by Zuccagni, Mogòrium goaénse, and vulgarly mugherino di Goa, mugherino di Castello, mugherino doppio. The latter is the variety of Sambac, which Cosmo III. wished to retain solely in the garden of the royal villa Castello; and, in fact, this plant of royal privacy was kept in custody with great care for more than a century; but the great Duke Leopold, superior to the prejudices of his predecessor, not only ordered that it should be propagated in all the royal villas, but that it should be distributed amongst amateurs in this as well as in other countries; and, thanks to such provident liberality, the species is preserved in Europe. Had not this been the case, we should have been deprived of a shrub which is the ornament of the green-house, and which, during the time of its flowering, is celebrated for its exquisite fragrance; as, in 1791, from some unfortunate effect of malaria, all the plants of it in Tuscany died, and that which was brought from Haarlem also; and the former is now known by the name of Nyctánthes pulchérrima, or the fameux jasmin du Grand Duc de Toscane. (Vide *Zucc. Cent.*, i.)

From this you will see, that the anecdote you have taken from the *Sentiment of Flowers* is an ingenious invention to account for the custom of ornamenting the head of the bride on the day of her marriage. But much earlier than 1689 (the period of the introduction of the mugherino di Goa), the people in the south of Italy had a custom of ornamenting the head of the affianced bride, when she approached the altar to have the marriage ceremony performed, with the jasmin, to show her husband that she was as pure and fragrant as this flower. I suspect that this custom has been transmitted from the East; and Moore, whom you quote, I see is of my opinion.

Catálpa syringæ*fólia*. — Speaking of this tree, you have not mentioned, among its uses, that the Japanese, according to Kæmpfer and Thunberg, give a decoction of the pods to asthmatic persons, and apply the leaves to allay pains in the limbs. With us, particularly among female doctors, a decoction of the pods is ordered as the only remedy for curing the humid asthma (asma umida), and also for catarrhal coughs.

As I wish to try the cultivation of *Cònium Arracàcha*, I shall feel much obliged if you will have the goodness (if it is not very inconvenient to you) to try to get me ten or twelve of the seeds. — *G. Manetti. Monza, Sept.*, 1837.

[We are not aware of there being any seeds of this plant in Britain; though we understand there are living plants in the Glasgow Botanic Garden. If we had either seeds or plants, there is no correspondent that we would be more happy to send some to than our friend Signor Manetti. — *Cond.*]

Art. V. *Queries and Answers.*

Insects injurious to Pear Trees. — Many of the pear and apple trees here yearly sustain great injury from a cause which, until lately, I was unable to penetrate; but, on looking over a lately published part of the *Horticultural Transactions* (part ii. vol. ii.), I found the injury and its cause accurately described by Mr. Knight, who also states what he found to be an effectual remedy. I refer you to that work for an account of the insect, and the manner in which it damages the leaves; and, in case it is not known in your vicinity, I have enclosed in the box a few of the damaged leaves for your inspection; but I believe all the larvæ have escaped.

I found the moth upon the trees exactly as described by Mr. Knight; and, by way of experiment, I procured an engineful of soapsuds from the washhouse, with which I well sprinkled one pear tree (a York bergamot); and I now find that tree very nearly free from the disease, while its neighbours on both sides (of different sorts) have more than half the surface of many of their leaves totally destroyed. Whether my application drove away the insects, or whether they prefer other sorts of pears to the York bergamot, I am unable to determine; but I believe the former to be the case, soapsuds being destructive to some other kinds of insects. I have cleared badly infested plum trees from aphides by two washings with that liquid. — *J. B. Whiting. Kiplin, Catterick, Aug.* 13. 1837.

It does not appear quite clear, from the above communication, at what period the application of the soapsuds was made. I should think, as the larvæ are within the leaf, no application whilst in that state could affect them. The perfect moths may, perhaps, be deterred from laying their eggs upon trees having had such an application; but I should think tobacco-water, or gas-tar-water would be more disagreeable to the moth than soapsuds. — *J. O. W.*

" The moth, which is the Tinea Clerckella of Linnæus, appears in the end of May and the beginning of June; and it is readily distinguished by the silvery whiteness of its wings, which are tipt lightly with brown, and by its small size, its length scarcely exceeding a single line. It is an extremely pretty little insect, and possesses so much activity, that it is difficult to obtain a living specimen of it. It probably deposits its eggs, or, perhaps more properly, its spawn, upon the under surfaces of the leaves; and the larvæ, having there penetrated through the epidermis, feed upon the internal parenchymatous

matter of the leaf. Brown and lifeless circular spots in consequence appear upon the leaves, such as an excess of heat would occasion; and I have known several gardeners who have supposed it to be caused by solar action. These lifeless spots enclose the larvæ of the moth above mentioned, which do not exceed a line in length. Whenever the leaves of a pear tree contain many of these, the fruit does not acquire nearly its natural size, and it ripens without acquiring either sweetness or flavour. This insect is an old inhabitant of our gardens: I first observed it half a century ago, but it appears latterly to have become much more abundant. It greatly prefers some varieties of pears to others; the Chaumontelle appears, amongst the varieties in my garden, its favourite, and the glout morceau that which it likes least. The moth is, I believe, but little known; for Mr. Curtis, who was so kind as to give me the name of it, did not possess a specimen till he received one from me. My pear trees had sustained, during many successive years, so much injury from the depredation of this insect, and their fruit had in consequence become so defective in freshness and flavour, that I resolved to uproot the whole of them, if I failed to succeed in destroying or driving away the insects; but in the last summer I had the good fortune to obtain perfect success in driving them away by the means which I proceed to describe.

"Early in the spring of the year, when the blossom buds of my pear trees were about the size of large peas, water, which held in suspension a mixture of lime and flower of sulphur and soot, in about equal portions, was thrown by an engine over the pears trees and the surface of the wall to which they were trained. I applied this mixture because I had observed, as I have stated in a former communication, that it had apparently prevented the appearance of blistered leaves upon my peach and nectarine trees, though by what mode of operation I was then, as I still am, wholly at a loss to conjecture; but since the first application of it, I have not seen a single blistered leaf upon any tree to which it was applied. I, of course, distinguish blistered leaves from such as have been made to contract by the bite of the aphis.

"The moths appeared as abundant as in the preceding year; and I then caused my trees to be washed once in every week during a month, after I witnessed the first appearance of the moth, with a weak infusion of tobacco in water: this mode of treatment proved successful, and the foliage of my pear trees, and some plum trees contiguous, escaped all injury. The moths were, however, only driven away; for the leaves of two pear trees which grew at some distance were almost wholly destroyed, and the foliage of the medlar and cherry trees in the vicinity sustained a good deal of injury from them. Nearly all the leaves which contained any of the larvæ were collected and burned, and comparatively very few of the larvæ escaped; and I do not at all doubt but that, by adopting the same measures next year, I shall succeed in securing my pears from future injury.

"There is another species of insect which frequently injures the pear tree, whose depredations are less visible, and consequently less known to gardeners. It has greatly the appearance of an aphis, and is found dispersed over the under surface of the leaves whilst young, and is always immersed in a globule of honey. In their more mature state, these insects are found congregated round the base of the buds, particularly those which are calculated to form blossom buds. In this, as in their first situation, they emit much honey, and the transmutation of the leaf bud into a blossom bud is prevented. A large number of humble bees and wasps are always attracted by the honey ejected by this insect, which will never fail to indicate its presence to the gardener. It is in size a little less than the black aphis usually seen upon the cherry tree; and its colour, when it is young, is a dull green, with dotted lines of pale brown; and in its mature state its colour is dark brown, with transverse stripes of green across its back. The colour of the male, which is winged, is nearly black, except the upper part of the abdomen, which is a dull flame-colour. It is (as Mr. Curtis informs me), the Psylla Pyri of Linnæus. I noticed it in the garden here about forty years ago, when it rendered all the

crop of pears perfectly worthless. I have subsequently pointed it out to gardeners in other situations; and I suspect that it often exists unnoticed, and greatly injures the quality of the pear. I washed my pear trees with an infusion of tobacco in the spring, which appeared to have destroyed the insects, but they appeared again in great numbers, and the frequent use of the engine did not prevent their doing considerable injury. Not improbably an infusion of the green leaves of either the Nicotiana tabacum, or N. rustica, which might have been obtained at a very small expense, would have destroyed or driven them off; but it did not occur to me to try it." (*Hort. Trans.*, 2d series, vol. ii. p. 107.)

Trees at Fawley Hall. — Have you had any account of the trees at Fawley Hall, which, I understand, are almost equal to those at Studley, of which you have given such beautiful portraits in the *Arboretum?* — *T. B. S. Liverpool, Sept.* 1. 1837. [We have not, and should feel extremely obliged to any reader who will procure it for us. — *Cond.*]

Watering Vegetables with a Solution of Soda. — A solution of soda has been applied with great success to the watering of vegetables. The difference between vegetables so treated, and those watered in the usual way, is very conspicuous. Vegetable marrow in common mould, when this process has been applied, has been found to surpass plants grown in a bed of dung. The proportion of soda used is 1 lb. to 14 gallons of water. (*Morn. Chron.*, Sept. 20.) [We should be glad to have some authenticated particulars on this subject. — *Cond.*]

Fúngi on Vine Leaves. — A correspondent having brought us some vine leaves from a vinery in the neighbourhood of Camberwell, the under sides of which were covered, more or less, with a yellow fungus, we sent some of them to Mr. Sowerby, who, in answer to our request that he would let us know the name, says, "The production upon the leaves of the vine (which is by far too common) belongs to the genus of *F*úngi Erinèum of Greville; but I do not know what specific name it has, unless it be the E. *vìtis*, which is very probable. It has been by some thought to be caused by wounds inflicted by some minute insect or mite; and for that reason, perhaps, has been omitted by Berkeley, in Hooker's *English Flora*. It is most probably a diseased state of the cellular tissue, producing hair similar to that in the Plìca polónica." — *J. D. C. Sowerby. Camden Town, Aug.* 1837.

Art. VI. *The London Horticultural Society and Garden.*

September 5. 1837. — *Papers read.* On the Chimonánthus frágrans, by the Rev. J. Bielfield. On the Vegetation of Seeds after boiling, by W. Wells, Esq.

Exhibited. Bolmer Washington plum, from Mr. William Blake, gardener to George Scott, Esq., of Hammersmith; imported by Mr. Blake. Two melons grown in the open air, from John Williams, Esq., of Pitmaston. Maltese melon, weighing 10 lb. 10 oz., from Mrs. Nichols of Chancellors, Hammersmith. Black Hamburg and muscat of Alexandria grapes, and twelve varieties of dahlias, from Mr. Patrick Flanagan, F.H.S. Peaches from T. A. Knight, Esq., President. Two plants of a new barley, from Mr. John A. Henderson, F.H.S. Oncídium Baúeri, from Mr. Dunsford, gardener to Baron Dimsdale. Ròchea falcàta, heartsease, and dahlias, from Mr. Lane of Berkhampstead. A collection of passifloras, dianthus, *S*olànum campanulàtum, *L*ýchnis Bungeàna, Lophospérmum scándens, and *Verónica* corymbòsa, from Mrs. Marryatt, F.H.S. Seedling dahlia (Croydon rival), from Mr. Hendrey of Croydon. Diánthus Físcheri, *M*álva chrèsia, *L*upìnus sp., and Trítoma mèdia, from Mrs. Marryatt, F.H.S. Figs, grown on an eastern wall in the open air, from Messrs. Colly and Hill of Hammersmith. Three drawings of orchideous plants, from Mrs. Withers of 16. Grove Terrace, St. John's Wood Road.

Seedling dahlias (Ansell's unique), from Mr. Thomas Ansell, Camden Nursery, Camden Town. Seedling and Cannon Hall muscat grapes, from Mr. Robert Buck, F.H.S., of Blackheath. Newly invented artificial stone flower-pots, by Mr. J. Stiff of 46. Regent Street, Lambeth Walk. Dahlias, from Mr. Thomas Hogg of Paddington. Seedling dahlias, from R. W. Eyles, Esq., of Brickwood House, Croydon. Fúchs*ia* fúlgens, from Mr. John Lee, F.H.S. A collection of dahlias, and a collection of plants, from the Hon. W. F. Strangways.

From the Garden of the Society. Epidéndrum ciliàre, *C*ombrètum purpùreum, Lobèl*ia* élegans, *P*hlóx Drummóndi, *C*eanòthus azùreus, dahlias. —*Fruit.* Apples: Mason's white, Calville rouge d'été, Oslin, summer rose, red Quarrenden, and early white Calville. Pears: Summer St. Germain (an excellent bearer as a standard), and poire de cygne, which is very different from the swan's egg pear, already so well known in this country, which seems not to be a French pear, Madeleine de Courson peach. Many kinds of fruits, which ought to have been ripe a fortnight ago, according to their period of maturity in the generality of seasons, have made little or no progress, as far as ripening and flavour are concerned, for the last ten days.

Awarded. A silver Knightian medal to Mrs. Marryatt; and silver Banksian medals to Mr. Ansell, and to Mrs. Nichols.

September 19. — *Read.* A paper on the Growth of Melons in open-sided Frames, by John Williams.

Exhibited. Crossed Housainee melons, grown in open-sided frames at Pitmaston, from John Williams Esq., C.M.H.S. Emperor Alexander apple, from Mr. Gibson of Turnham Green. Bignòn*ia* *j*asminòides, Frankèn*ia* pauciflòra and a collection of dahlias, from Messrs. Chandler and Sons. Cannon Hall muscat grape and two seedling grapes, a collection of seedling dahlias, and various cut flowers, from Mr. Robert Buck, F.H.S. *E*rìca verticillàta, *E.* mammòsa, Gésner*a* speciòsa, G. rùtila, Myánthus barbàtus, Geissomèria longiflòra, Ixòr*a* coccínea, *C*ássia sp., Cròwe*a* salígna, and *H*ibíscus sp., from Mrs. Lawrence, F.H.S. Gésner*a* splèndida, *H*edýchium Gardner*iànum*, and Góngòr*a* sp., from Mr. Redding, gardener to Mrs. Marryatt, F.H.S. Fúchs*ia* fúlgens, from Mr. John Lee, F.H.S.

From the Garden of the Society. Dahlias, Alstrœmèr*ia* hirtélla, Lobèl*ia* *Tùpa*, Diplopáppus incànus, Linària dalmática, Calandrín*ia* díscolor, *C*eanòthus azùreus, Stokès*ia* cyànea, and two hybrid petunias. — *Fruit.* Peaches: Grosse mignonne, George IV., noblesse, Royal George, Royal Charlotte, and Barrington. It may be remarked of this season, that the grosse mignonne usually ripens in the last week of August; so that peaches may be said to be more than a fortnight later than they generally are. Elruge Nectarine. Pears: Waterloo, Hessel, Yutte, franc réal d'été, deux têtes. These are all good bearers as standards. The Yutte pear is the most melting; but for some it is too much perfumed. The franc réal d'été is a good pear. Jeschil Armudi, a Turkish pear of fine colour, sweet, but not rich in this climate. Apples: Dutch codlin, k.; no core, k.; transparent de Christ, k.; Monk's codlin, k.; sack apple, k.; summer golden pippin (a valuable summer apple), clove pippin, summer Thorle, Leyden pippin, Kerry pippin, summer Crofton, summer July flowers, Duchess of Oldenburg. Pond's seedling plum, from a standard; a great bearer, and, no doubt, a good culinary plum. St. James's quetsche plum, from Fischer, Göttingen.

Awarded. A large silver medal to Mr. J. Lee, for the Fúchs*ia* fúlgens. A silver Knightian to Mrs. Marryatt, and to Messrs. Chandler, for Hedýchium Gardner*iànum* and Bignòn*ia* *j*asminòides. A silver Banksian to Messrs. Chandler, for dahlias; to Mr. Robert Buck, for Cannon Hall grapes; and to Mrs. Lawrence, for the Gésner*a* rùtila.

October 3. — *Exhibited.* *O*xalis Bowiè*i*, from Mr. Frost, gardener to Lady Grenville, Dropmore. Corysánthes macrántha, from Mr. Don, gardener to James Bateman, Esq., F.H.S. Gésner*a* splèndens, from Mr. Henry Groom, F.H.S. Fúchs*ia* sp., from —— Brickwood, Esq., of Grove Lane, Cam-

berwell: it was raised without artificial heat of any kind. A collection of dahlias, from Messrs. Chandler and Sons of Vauxhall. Muscat of Alexandria grapes; a queen pine-apple, weight 3 lb. 5 oz.; and a Jamaica pine-apple, weight 4 lb. 2 oz.; from Mr. Davis, gardener to Sir Simon H. Clarke of Oak Hill, East Barnet. Two queen pine-apples, weight 3 lb. 10 oz. and 3 lb. 2 oz., from Mr. Gundry, gardener to S. Paynter, Esq., of Richmond. *Erica colorans*, *Cytisus elegans*, *Amaryllis purpurea*, *Clematis Sieboldti*, *Gladiolus racemosus*, *Geissomeria longiflora*, *Erica verticillata*, *Vinca rosea*, *Poinciana pulchérrima*, *Justicia bicolor*, *Clerodéndrum speciosíssimum*, *Erica mammosa*, *Gésnera oblongata* and *speciosa*, *Convólvulus pentánthus*, *Ixora coccínea*, *Polýspora axillaris*, *Sedum Sieboldtii*, *Oncídium ciliátum*, *Eucomis speciosus*, *Crowea salígna*, *Cassia* sp., *Trevirana coccínea*, *Justicia oblongata*, *Brugmansia lutea*, *Loasa* sp., and *Chorízema* sp., from Mrs. Lawrence, F.H.S. *Oncídium papílio*, *Cattleya crispa*, *Cycnoches Loddigèsii*, *Cattleya Loddigèsii*, *Epidéndrum cuspidatum*, *Zygopétalum Maxillaria*, *Z. Mackayanum pállidum*, *Oncídium Baueri*, *Zygopétalum Mackayanum*, *Epidéndrum pulchéllum*, *E. elongatum*, from Mr. Dunsford, gardener to Baron Dimsdale, F.H.S. Dahlias. Apples: Reinette de Laak (a handsome table apple), yellow Ingestrie, Gravenstein, transparent de Zurich (partially transparent in this climate, a cider apple), Monk's codlin, Homes's large, k.; crimson queening, k.; Hollandbury, k.; Keswick codlin, k.; Hawthornden, k.; De Lande, k.; large white Calville, k.; summer July flower, k.; De Romaine, t.; autumn pearmain, t.; American summer pearmain, t.; Wormsley pippin, k. and t. (this apple still maintains its high character); How's pippin, t; clove pippin, t. Pears: Forme de béurre Duquesne, Drapier d'été (a very melting sort), beurré Romaine (a handsome fruit, deserving farther trial; perhaps on a wall, as it is not quite melting from a standard), poire figue, nouvelle dorée, Flemish beauty, Boughton bergamots, Duquesne d'été, orange bergamot (an old sort, now getting superseded by more deserving kinds), Hepworth (a very sugary, though scarcely melting, kind), early admirable peach. This generally grows very large; larger, indeed, than the heat of the past summer could render perfectly melting.

Awarded. A silver Knightian, to Mrs. Lawrence, for Clerodéndrum speciosíssimum; to J. Bateman, Esq., for Corysánthes macrántha; and to Mr. Davis, for the muscat of Alexandria grapes. A silver Banksian to Mr. Gundry, for pine-apples; and to Mr. Dunsford, for Zygopétalum *Mackayanum*.

Art. VII. *A Second Additional Supplement to the "Hortus Britannicus."*

A Second Additional Supplement to the Hortus Britannicus is now in preparation, and will be published, we trust, by Christmas next. We take this opportunity of inviting the curators of public and private botanic gardens to send us lists, with the requisite information to each species or variety, of such new plants as they may have received since 1832, which may not have been hitherto introduced in our Floricultural Notices in this Magazine, or have not been published in any other work. We trust Mr. Anderson, Mr. Cameron, Mr. Baxter, Mr. Biggs, Mr. Turner, Mr. Campbell, Mr. Shepherd, Mr. Marnock, Mr. M'Nab, Mr. Stewart Murray, Mr. M'Nab of Dollar, Mr. Mackay and Mr. Niven of Dublin, and Mr. Campbell of Belfast, together with such cultivators, nurserymen, or private gardeners, as possess, or have the charge of, collections, will accept of this intimation instead of a private letter. Every contribution will be duly noticed in the preface to the work, of which a presentation copy will be sent to every contributor.

THE

GARDENER'S MAGAZINE,

DECEMBER, 1837.

ORIGINAL COMMUNICATIONS.

ART. I. *A summary View of the Progress of Gardening, and of Rural Improvement generally, in Britain, during the Year* 1837; *with some Notices relative to the State of both in Foreign Countries.* By the CONDUCTOR.

IN order to facilitate the comparison of this summary with that given last year (see Vol. XII. p. 613.), we shall proceed nearly in the same order we have there adopted; viz. 1. The general Subject; 2. The Science of Gardening; 3. Practice; 4. Statistics; 5. Rural and Domestic Improvement generally; 6. Gardening and Rural Improvement in Foreign Countries; and, lastly, 7. Obituary.

THE GENERAL SUBJECT.

Every year appears to add to the interest which is taken in gardening pursuits in this country; and for some departments, particularly that of floriculture, the public at present may be said to have a decided passion. The culture of the dahlia, though it has not attained so extravagant a pitch in England as that to which the tulip is said to have arrived in Holland, is yet now engaged in, in Britain, by a much greater number of persons than ever were possessed by the tulipomania. The excitement produced by the premiums offered by societies for excellence in this flower has been one of the chief sources of income to nurserymen and florists throughout the country for some years past; and is rather on the increase than otherwise. It is satisfactory to find that it has not altogether absorbed the attention and the energies of country gentlemen; and that the planting of the more choice kinds of trees and shrubs, and the forming of pinetums and arboretums, though not yet so general as the culture of dahlias, and the laying out of flower-gardens, is making considerable progress. We should not wish to see the ardour for the dahlia and other flowers in the slightest degree diminished; and, with respect to flower-gardens, they cannot be too numerous, though we wish we could see them laid out and planted in better taste: but, combined with this ardour for

floriculture, we certainly do wish to see country gentlemen and their gardeners more alive to the beauty and interest created by trees and shrubs. To the comparative permanence of that beauty and interest, we have to add the fact of the trees and shrubs requiring less annual care, in every future stage of their growth, than any description of herbaceous plants. We must refer our readers to what Du Hamel says on the subject. (See Vol. XI. p. 614.). A single year's neglect in a collection of dahlias, or of a flower-garden, will be attended with the certain loss of the finer varieties in the one case, and with confusion and disorder in the other; but trees and shrubs, if not planted too closely together, will maintain their beauty and interest for several years, with no other attention than that of excluding cattle, or other animals that are injurious to them. This may be considered as proved by the collection of trees and shrubs at White Knights, on which no expense has been bestowed in procuring new kinds for the last twelve years, while those remaining are still the admiration of every one. Again, therefore, we recommend the formation of collections of trees and shrubs, of pinetums, of quercetums, salicetums, ulmetums, thorneries, and hardy heatheries, to the possessors of country residences; and the giving honorary prizes for such collections to horticultural societies.

As the influence of societies and of publications is as great in gardening as it is in other human pursuits, the establishment of the *Gardener's Gazette*, in January last, and the commencement of the Central School of Horticulture and Agriculture more recently, may be recorded as the most conspicuous features of the gardening history of the year 1837. For both the public appear to be indebted to the activity and zeal of Mr. George Glenny. The West London Gardeners' Association for mutual Instruction was commenced in Nov. 1836 (see p. 88.). Its meetings have been held regularly during the present year; and, though it is not calculated for display, yet we question if any horticultural society in existence is equally well adapted for the improvement of young gardeners. This society, which consists solely of working gardeners, owes its origin and its activity mainly, we believe, to our correspondent Mr. Fish.

Unfortunately, it is only in the neighbourhood of large towns, where there are a number of suburban gardens, that such associations as the last can be formed; but, as every gardener, before he can be considered as deserving a good situation, must have worked one year, at least, in one or other of the public gardens in the neighbourhood of London or Edinburgh, there are ample materials for two institutions of the kind; and smaller ones might be formed in all country towns, wherever there were three or four gardeners in the immediate neighbourhood. The advan-

tages of mutual verbal discussion, among persons engaged in the same pursuit, are so great, that they can scarcely be exaggerated. The very circumstance of acquiring facility in expressing our opinions in an off-hand manner is, next to writing a good letter, a great personal recommendation to any man. It may be said to be to the mind what cleanliness and propriety of dress are to the body; and it never can fail to insure respect. We have often taken occasion, in this Magazine, to recommend the study of English grammar, composition, and letter-writing to young gardeners; because, it is by the appearance and manners, or by the correspondence, of an applicant that the greater number of the employers of gardeners judge of their general merits. To have a good address, and to be able to write a good letter, will not enable a gardener to keep a place after he has got it; but it will go farther towards securing him the preference in a competition for one, than any other kind of knowledge that we are aware of; unless, indeed, the proposed employer has some knowledge of gardening himself, or relies solely on the judgment of another to choose his gardener. We say nothing here of the professional advantages which the members of such an institution as the West London Gardeners' Association will derive from it, since they must be obvious to every one. Associations of this kind, in connexion with a system of examination similar to that now practised by the Horticultural Society (see Vol. XII. p. 610.), would probably go farther towards raising the scientific character of gardeners than any other cause whatever.

THE SCIENCE OF GARDENING.

Vegetable Physiology and Systematic Botany. — The subject of hybridising, or cross-breeding, in plants has been philosophically treated by the Hon. and Rev. W. Herbert (see p. 270.), and the doctrine confirmed, that it is by art thus employed, and by selection, that the most ornamental and the most useful varieties of vegetables are to be procured by man from the species supplied by nature; which species, with reference to human enjoyment, may be considered as the raw material for man's manufacture or adaptation to his use. It may not, at first sight, appear that cross-breeding is of equal importance in culinary vegetables and forest trees as it is in flowers and fruits; but this is merely because selection has been more employed in the case of these productions than hybridising. Cultivators, however, of the garden, the farm, and the forest, are every year paying more and more attention to the subject of procuring improved varieties; and what Mr. Herbert has done in flowers, and Mr. Knight in fruits, will be, in time, effected in the common vegetables and corns, and even in forest trees. Some very interesting physiological remarks by Mr. Beaton (p. 203.), having immediate application to the manage-

ment of fruit trees, with regard to improving the produce and procuring new varieties, deserve the particular attention of the practical gardener. Among the many scattered facts relating to vegetable physiology which will be found recorded under the head of *General Notices* in the present volume, we may refer to a remark by Signor Manetti respecting impregnating plants with strong or peculiar odours. (p. 624.)

Climate. — The subjects of temperature, the weather, and water, relatively to the culture of plants, will be found treated on in various articles, but more particularly in one in p. 14., and in the introduction to Mr. Thompson's *Fruit Report.* (p. 544.)

PRACTICE OF GARDENING.

New Agents of Culture. — A very important point which we have to notice under this head, is the process of Kyanising, or tanning, every kind of wood to be used for garden purposes, by immersing it in a solution of corrosive sublimate. It is not easy to convince practical men of the value of this preparation; nevertheless it is placed beyond all doubt, both by theory and experiment. We refer to what is stated on the subject in p. 365.; and we may also direct attention to several papers in the *Architectural Magazine* for the present year, and one by Charles Waterton, Esq., in his *Essays on Natural History*, just published. One caution we think it necessary to give to those who intend making use of this process, which is to shape and fit the wood to be Kyanised exactly for the purpose for which it is intended before submitting it to the process. This will appear the more necessary, when it is considered that the Kyanising, or tanning, process penetrates only a very few lines into the surface of the wood: in close-grained wood, for example, such as the beech, not more than a quarter of an inch; and in looser-grained woods, such as common deal, very seldom more than half an inch. If, therefore, a gardener were to Kyanise tallies for naming plants, or sticks for tying them up, before sharpening the ends to be inserted in the ground, and were to sharpen these ends afterwards, the rot would commence below, just as soon as if the process of Kyanising had not been employed. We are particularly anxious to impress this on the minds of gardeners; because, in consequence of some persons having an idea that the corrosive sublimate penetrates to the very heart of the wood immersed in it, they have it Kyanised first, and sawn up into the forms in which they mean to use it afterwards. Assuredly, the wood so treated, if in pieces thicker than an inch, will not be rendered one whit more durable by the process than if it had never been submitted to it. On the other hand, by preparing the wood first, and Kyanising it afterwards, not only a prolonged durability is obtained, but the expense of painting is rendered unnecessary, unless for ornament. The process of Kyanising is calculated to give much greater dura-

bility to espaliers for fruit trees; to hot-bed frames and sashes of every description; to all kinds of trellis-work; to rods and stakes of every kind for tying up plants; to tallies, large and small, for naming plants; to mats and canvass for covering them; to packthread and strands of bast mat for tying them; to baskets for carrying them; and to hurdles of reeds or straw for protection; and, in short, to every thing made of wood, or vegetable fibre, used in the formation or culture of a garden. It would thus be a great benefit to the proprietors of gardens and pleasure-grounds, if they could overcome their prejudices so far as to give it a trial. As objects deserving of recommendation, we may mention zinc labels and prepared ink, as the very cheapest and easiest method of naming plants, and as one that will last from seven to ten years, which is more than double the duration of wooden labels, that are not Kyanised. An improved method of painting, lettering, and varnishing wooden tallies (p. 58.) deserves the attention of those who have not faith in the Kyanising process. Green's chests of tools for amateur gardeners, and especially for ladies, may be safely recommended to amateurs.

Garden Operations. — Several modes of grafting the vine have been suggested at different times in this Magazine, and one of the most successful is described at p. 117. The subject of herbaceous grafting has never been taken up as it ought to be by British gardeners, though it might be employed as one of the most expeditious and successful methods of multiplying the more rare species of the pine and fir tribe. Almost the only gardener in this country who has adopted it successfully is Mr. Smith of Hopetoun House. The mistletoe has been, for some years past, sucessfully budded and grafted on different kinds of trees by a nurseryman at Malvern (see p. 206.); so that the curious, in every part of the country, may now possess plants bearing this interesting parasite.

Insects, Diseases, &c. — The injuries caused by insects in former times, were considered by cultivators as blights sent by Providence, which could not be prevented, and must, therefore, be submitted to; but modern science, by tracing these evils, in common with others, to their origin, has given us, to a certain extent, the control of what was once considered as fate. Gardeners are now beginning to discover insects where they never before thought of looking for them; and hence we have considered it for their advantage to devote more attention and space to entomology in this Magazine than we have hitherto done. The articles in the present volume by Mr. Westwood, are not only calculated to instruct the gardener as to how he may prevent or destroy insects, but to sharpen his habits of observation generally, and to render the study of insects not only a beneficial, but a pleasureable, pursuit. Other articles respecting insects, contributed by

various correspondents, and the publication of the very original work of Köllar, mentioned under our *Literary Notices*, as particularly adapted to gardeners, will contribute to the same result.

Landscape-Gardening and Garden Architecture.— We have been gratified by having observed, in the course of the year a garden in which, without any knowledge of what had been written in this Magazine on the subject of the Gardenesque, a very perfect example is exhibited of this style of planting and management. We allude to the grounds of the Rev. T. Williams of Hendon Rectory, in which there is a portion of shrubbery which forms a perfect example of this manner. While the whole of this shrubbery resembles, at a distance, other continuous masses of shrubs; yet, as we approach it, we discover that every individual shrub is isolated, and is at several inches' distance, according to its height, from those which surround it. Regarding these shrubs more closely, we find that each has, by pruning and tying in, or stretching out, its branches formed into a regular symmetrical head; still maintaining the natural shape of the shrub or tree, whether conical, globular, fastigiate, or spreading. In consequence of the light and air admitted all round the plants so treated, their sides are covered with fine foliage, and, in the proper seasons, with blossoms and fruit. The taller-growing shrubs are placed in the middle in the usual manner, and the lower growing kinds at the margin; and, while there is a judicious composition of evergreens and deciduous kinds, in order to produce effect in winter as well as in summer, not a single herbaceous plant is introduced. A nearer approach to our beau ideal of a gardenesque shrubbery we never expect to meet with; and what enhances the interest is, that only the more rare and valuable species are admitted. It is true that this mode of culture is much more expensive than the picturesque manner in which shrubs are planted at irregular distances, and allowed to grow up touching each other in groups or tufts, without much pruning; but, while the picturesque manner has its own beauties, and is best adapted for shrubberies on an extensive scale, where not many species are employed, the gardenesque manner is better adapted for small gardens, where there is only room for one plant of a species or variety, or where the species and varieties employed are rare and valuable. The gardenesque manner (without much pruning or tying) is obviously the only mode adapted for public institutions; in which every tree and shrub ought to have sufficient room to show its natural shape, and ought on no account to have that shape and its general effect neutralised by being surrounded by a common monotonising mixture, such as we find in almost all public gardens, even where rare plants are introduced. It is gratifying to find that there is an increase in the improvements going forward in the landscape department through-

out the country. Among the garden buildings newly completed, or in progress, may be mentioned the range of hot-houses in the Manchester Botanical and Horticultural Garden, those in the Edinburgh Botanic Garden, a splendid conservatory preparing for Trentham Hall by Clark of Birmingham, a range for the Duke of Bedford, and a gigantic house at Chatsworth. Among the minor structures figured and described in the present Volume, is a span-roofed pit for green-house plants, by Mr. John Bevis (see p. 247.), in which ventilation is effected in a manner which prevents the plants from damping off during winter. The use of garden ornaments of artificial stone, or of earthenware, is increasing rapidly throughout the country. In many places, they are not introduced with propriety, and in others they are far too numerous; but their frequency will lead reflecting persons to enquire why they please in some instances, and displease in others; and, in the end, a better taste will prevail. Whoever understands the meaning of the phrase "unity of expression," and can examine any scene presented to him by the test of its being or not being "a harmonious whole," will be able to determine what is right and what is wrong in the disposition of sculptural ornaments in gardens. All architectural objects and statuary, being ponderous and intended for great duration, should be placed on bases obviously secure and durable. A vase or a statue should never be set down on grass or on dug ground, without a decided pedestal, resting, or appearing to rest, on a secure foundation; and it should never be set on anything less obviously durable than masonry. Where such objects form the predominating features in a scene, they should always be connected with some kind of building, such as a parapet or terrace wall, or even a stone border to a walk, a bed, or a pond; and, in default of these, even a paved walk between a row of statues, the pedestals standing on a flag-stone, projected from the pavement into the adjoining turf or dug ground, will tend to preserve unity of expression. Even an area of gravel projected from a gravel walk, and extending an inch or two all round the pedestal, will have a tendency to maintain the secure architectural character which ought always to accompany architectural and sculptural objects. Root-works, rustic baskets, and other temporary objects or structures of this kind, should seldom or never be introduced in the same scene with vases, statues, or other articles of stone. A very common error in composing what is called rockwork is, to intermix temporary materials, such as old roots, stumps of trees, &c., with durable and permanent ones, such as fragments of rock, pieces of scoriæ, vitrified bricks, &c.; with artistical fragments, such as pieces of hewn stone, sculpture, vases, &c.; or with natural objects, such as shells, corals, &c.; than which nothing can be more heterogeneous, or at variance

with the principle of unity of expression. Each of these classes of materials might make so many different kinds of rockwork, or rather of habitats for the display of plants. To mix all of them, or even any two of them, together is, however, in our eyes, at variance with every principle of good taste. We think it useful to throw out remarks of this kind in this general summary; because, as we have stated in former volumes, the point in which modern gardeners most require advancement is, the perception of consistency and inconsistency in matters of taste. Temporary glass structures, flued borders, and conservative walls have been mentioned or treated of in different parts of the present Volume; and, though the subject of growing exotics in the open air by means of such aids is yet in its infancy, it promises to be an inexhaustible source of beauty and interest, as superior to that produced by plants grown in small pots, as a conservatory is to a shed-roofed green-house.

Arboriculture. — Some years ago, through the exertions of Mr. Lawson, the eminent seedsman of Edinburgh, many thousands of *Pinus Cémbra*, raised from seeds imported from Switzerland, were planted in different parts of Scotland; and, what is remarkable, though this tree, in the climate of London, seldom makes shoots above 6 in. or 8 in. in a year, in the neighbourhood of Edinburgh it has made shoots from 1 ft. to 2 ft. annually. A great many larches, raised from seeds received from the Tyrol (see *Highland Soc. Trans.*, vol. xi. p. 391.) by Mr. Lawson, have also been planted in Scotland; and the plants, we are informed, show a deeper green in the foliage than that of plants raised from British seeds. The black pine of Austria, also introduced by Mr. Lawson, has been planted to a considerable extent; more especially by Sir John Nasmyth, at New Posso, in Peeblesshire. Among the most useful exertions that have been made in arboriculture for the last year, and during some years previously, are those of Messrs. Grigor, nurserymen at Elgin and Forres; who, stimulated by the rewards offered by the Highland Society, have been the means of disseminating many thousand plants of the true Highland pine, by far the most valuable timber tree indigenous or in cultivation in Europe, next to the larch and the oak. It may be worthy of remark, that, of all the ultra-European trees which have been cultivated, in Britain, for such a time as to admit of forming an estimate of the value of their timber, there is not one the timber of which is equal to that of the trees indigenous to Europe. The only shadow of an exception is the *Pópulus* monilifera, which is a very doubtful native of America, and much more likely, in our opinion, to be an improved European tree. The oaks of America, beautiful as they are, are worth little as timber, either in America or Europe, when compared with the British

oak; with the exception of the live oak, which will not attain a timber size in Britain. No American pine or fir, that will attain the size of a forest tree in this country, has wood equalling that of the Scotch pine, the larch, or the spruce. We might, in like manner, go through all the genera of American trees; but we have said enough, we trust, to impress the reader with an idea of the importance of cultivating for timber, and on a large scale, the improved varieties of European species. Not that we wish to discourage the planting of ultra-European trees on a large scale also; because there may be some of these that will prove far more valuable in this country than we have any idea of; and, also, because they add to the variety and beauty of our general scenery, and may, at some future time, give rise to improved kinds by cross-breeding.

Some valuable remarks on the progress of the beech in exposed situations, and on raising the oak in the government plantations, will be found in the present Volume.

The Arboretum et Fruticetum Britannicum (we do not refer to our book of that name, but to living collections), in general, receives some little addition every year. Among trees, the most remarkable that has been brought into notice during 1837, is a species of fir from Cephalonia. It was raised from seeds received from the island of that name, by Charles Hoare, Esq., ten or twelve years ago; but no notice seems to have been taken of it by any one, till the recent increasing taste for planting pinetums stimulated the nurserymen to search in every direction for new species of pines and firs. One of the finest shrubs brought forward during the year is Cowàn*ia* plicàta (see p. 452.). It is evergreen, with the leaves and habit of a shrubby potentilla; and flowers like those of the rose in form and structure, and of a pink colour. A double-flowered rhododendron has been originated in Paris, and the whole stock of plants of it already imported into this country, by Mr. Lawson of Edinburgh. A few new kinds of trees and shrubs have been raised, during the past summer, in the garden of the Horticultural Society, which will form subjects of notice on some future occasion. A valuable article on the propagation of the pine and fir tribe by cuttings, by Mr. Lindsay; and another by Mr. Frost, on his mode of treating the rarer species in the Dropmore pinetum, well deserve the attention of nurserymen and gardeners who have the care of collections.

Floriculture. — Dahlias and roses in the open garden, and orchideous plants in the stoves, continue to be the fashionable objects of culture. Some new Californian annuals or perennials, raised from seeds sent home by Douglas, or some other collectors, are annually coming into flower, and finding their way into botanical periodicals and catalogues. Some interesting additions to our knowledge respecting such ornamental flower-

ing plants as will not be eaten by hares or rabbits have been made by Mr. Frost of Dropmore (see p. 498.); and Mr. Caie has directed attention to the very important subject of the culture of certain of the most beautiful of our hardy annuals; which, when sown in autumn, will endure our most severe winters, and come into flower earlier in spring that they would by any other mode of treatment. This, as we have elsewhere shown, will afford to those who cannot go to much expense, a very cheap mode of making a fine display in a flower-garden; and, as many of these annuals thrive under the shade of deciduous trees, they will admit of producing a fine show of flowers in situations in woods and among groups of trees, where no art of the gardener can make flowers in general thrive.

Horticulture. — We refer to Mr. Thompson's interesting report, by which it will appear that the present year has been singularly unfavourable for judging of the character and merits of different kinds of fruit. A fair estimate of the merits of the coiling system of vine culture has been made by Mr. Grey (p. 500.), who thinks that it requires too much expense and attention for general use; which has been our opinion from the first introduction of this mode of training by Mr. Mearns. (See Vol. X. p. 141.) Mr. Paxton informs us that the *Mùsa Cavendíshii* still continues to answer his expectations; and he is of opinion with us, that it will soon become one of the most valuable hot-house fruits for small suburban gardens; because it may be grown in a pit, heated either by dung or fire heat; because, like other scitamineous plants, it does not require an intense light; and because a single plant will produce at least ten times more fruit than a pine-apple plant, which would occupy the same space, and require the same, or a longer, period to bring it into a fruiting state.

The advantage of using a sloping trellis for training pear trees has been pointed out (p. 259.); of disbudding, instead of cutting (p. 203.). Various facts have been brought forward respecting the shriveling and the rust of grapes; and improved methods have been detailed of bringing forward early melons, forcing strawberries, and raising salads of chicory, for which we are indebted to Mr. Cuthill. Several culinary vegetables, which are either new, or worthy of being better known, will be found in our Olitorial Notices (p. 33.), and in an article by Mr. Whiting (p. 499.). To these might be added, a new pea, of the tall marrowfat kind, of which there is yet only a small stock in the Hammersmith Nursery; and a new field turnip, sold by Mr. Forrest, which will be hereafter noticed. A new oil plant, said to produce oil equal to that of the olive, and in immense quantities, has been brought into notice by M. Bosch, the curator of the Botanic Garden at Stuttgard; for which he received the ld medal of the Stuttgard Agricultural Society, and a present

of thirty ducats from the king. It is an annual of the order Compósitæ, but we have not been informed of its name; and, though a native of South America, it is so hardy, that, even in Wirtemburg, it may be sown in the autumn.

The last subject which we shall mention is the cultivation of the truffle; an object, in our opinion, very much to be desired, and to encourage attempts at which, it would be worth while for Horticultural Societies to offer large premiums. An elaborate article on the subject, translated from the German, will be found p. 408.

STATISTICS OF GARDENING.

Botanical Collectors. — A gardener, sent to India by that munificent patron of gardening, His Grace the Duke of Devonshire, returned in August last, bringing with him a living plant of Amhérst*ia* nóbilis, a number of new Orchídeæ, and various seeds. A subscription society have sent Dr. Lippold to Madeira, whence he will proceed to the Canaries; and M. Hartweg, sent to Mexico by the Horticultural Society, has already forwarded to them various seeds, including acorns of some of the curious Mexican oaks, so remarkable for the form of their acorns and cups, as may be seen by the figures of the American species of Quércus in our *Arboretum Britannicum*.

Gardening Tours. — Mr. Forbes, head gardener to the Duke of Bedford, has, at His Grace's expense, made a tour on the Continent, the particulars of which he has laid before the public in a work which we have noticed in p. 316.; and we direct attention to the subject, partly because we consider the Duke of Bedford as a model for an English nobleman, in all that respects gardening and rural matters; and, partly, because we think it would be much for the benefit of gardeners and the gardens under their care, if other wealthy noblemen and gentlemen were to follow His Grace's example. It may not be practicable for all head gardeners to be spared so long from their charge as to allow of their travelling on the Continent; but there is not one who should not be allowed time and money sufficient to enable him to make a tour to the principal gardens in our own country. Seeing the gardens of his neighbours, and reading books on gardening, are the only modes by which a master gardener can be instructed as to what is going on beyond the walls of his own garden; and the employer who does not encourage these two modes of acquiring information, is not duly alive to his own interest. He does not even know the best mode of keeping down his nurseryman's bills; because a gardener who does not visit his neighbours, cannot make any exchanges of seeds, cuttings, or plants with them; and, without frequent exchanges, every garden, from the worst to the best, is liable to deficiencies, only to be made up by purchases from the nursery-

man or the market-gardener. Foreign employers are more fully aware of the advantages of sending their gardeners to travel than we are; for, while we can point to Mr. Forbes alone, as the only English gardener of a private nobleman who has visited the Continent during 1836 and 1837, there are the gardeners of Prince Metternich and Baron Hügel of Austria, and of Baron Rothschild of Frankfort, who have visited this country within that period; independently of various curators of public botanic gardens, and of commercial gardeners.

Botanical and Horticultural Societies and Exhibitions still continue to multiply and prosper, of which ample proof will be found in our article in a subsequent page. We have already noticed the commencement of a new society for holding exhibitions and other purposes in the metropolis.

Public Gardens. — Some improvements are going forward in most of these. A new architectural palm-house is nearly completed at Kew, as is the extensive range of hot-houses in the Manchester Botanic Garden. (See p. 376.) The Botanical and Zoological Garden at Cheltenham, one at Manchester, and another at Bath, all laid out by Mr. Forrest, are in progress. Ground for a garden of this kind has been obtained at Leeds, and endeavours are making to establish one in the prosperous town of Newcastle. We regret that we cannot notice anything of this kind as in contemplation for the metropolis; nevertheless, there is a proposal for establishing a botanic garden for the county of Kent, on the banks of the Thames, near Gravesend; which, if carried into execution, will be within a convenient distance of the botanists of the metropolis.

Private Gardens. — We have little to add to the information given last year respecting the improvements going forward at Chatsworth, Woburn Abbey, and Trentham, except that they are all carried on with vigour. As we could only notice a few of the other private gardens which are undergoing improvement, we think it better to be silent, lest we should appear partial or unjust.

Commercial Gardening. — The number of foreign nurserymen who come to this country on business is on the increase, as is the commerce in Dutch bulbs, and in dahlia tubers, camellias, and pelargoniums.

Garden Literature. — On turning to our article *Reviews*, the only work of importance to gardening generally, which has appeared in the course of the year, is Herbert's *Amaryllidaceæ*, extremely valuable for the experiments in cross-breeding which it details. Two of the most remarkable works, which belong to the division of systematic botany, that have been published in the course of the year, are, Hooker's *Icones Plantarum*, and Bateman's *Orchidaceæ* (see p. 507, 508.); but the most useful work is, unquestionably, vol. ii. of *Ladies' Botany*, by Dr. Lindley. The British botanist, or the tyro desirous of becom-

ing acquainted with the plants of his native country, will be alike gratified and instructed by the second volume of Watson's *Botanist's Guide*,and Francis's *British Ferns*. The first volume of the *Flora of Jamaica*, by Dr. Macfadyen, supplies a botanical desideratum, and abounds in information both for the botanist and the gardener. (See p. 590.)

The most valuable foreign work for gardeners and farmers which has appeared in the course of the year is Köllar's *History of Insects*, which, as will be seen by our *Literary Notices*, will very shortly appear in an English dress. The First Part of the *Transactions of the Hort. Soc. of Frankfort* has been published in the course of the year; and the *Annales de la Société d'Horticulture de Paris* continues to be enriched with the very valuable papers of M. Poiteau, M. Loiseleur Deslongchamps, M. O. Le Clerc, and others. *The Annales de Flore et de Pomone*, now in its fifth year, continues to appear monthly, and to exhibit figures and descriptions of the plants considered the most rare or beautiful in the neighbourhood of Paris. The number for November contains a description of the double rhododendron, already referred to. The establishment of a gardening newspaper has been already noticed. The most valuable agricultural periodical in Britain is the *Quart. Jour. of Agr.*, published along with the *Prize Essays and Transactions of the Highland and Agricultural Society of Scotland*. In the number of that work for March, 1837, there is an article, "Studies in the Science and Practice of Agriculture, as connected with Physics," of which we had intended to give some account in the present Volume; but want of room obliges us to defer it. In meantime, we strongly recommend this publication, which is now reduced from 6*s*. to 5*s*. a number, to all our agricultural readers.

RURAL AND DOMESTIC IMPROVEMENT GENERALLY.

In Agriculture, the principal circumstance suitable for being noticed in this work, is another trial of Heathcoat's steam plough, at the exhibition held by the Highland Society of Scotland at Dumfries. An account of a previous trial will be found in the *Highl. Soc. Trans.* vol. xii. p. 72.; and in our Vol. XII. From the newspaper reports, the general opinion does not seem to have been much in its favour; as there seems to be an immense waste of capital and of power attendant on the stationary engines. It has always appeared to us that it would have been much better to endeavour to invent a machine suitable for ploughing ordinary soil, than for turning over the surface of peat bogs. But the time does not seem to have arrived for estimating the value of an efficient substitute for the plough, to be impelled by steam; when it does, the offer of a reward of from 1000*l*. to 5000*l*. will soon call it forth. The number of new and improved varieties of grain, grasses, roots,

and plants, which were exhibited at the great agricultural meeting at Dumfries, was more numerous than that held at Perth last year; thus proving that there is an increased desire for the cultivation of new varieties on the part of the farmers of the northern counties. A great desire for the introduction of better varieties of wheat, we are informed, exists in East Lothian and Berwickshire; and the farmers there must have derived great satisfaction, and most valuable instruction, from the perusal of Col. Le Couteur's *Treatise on Wheats*, reviewed in a future page. Agricultural museums are now established at Edinburgh, Stirling, Perth, and Dundee; and all persons interested in agriculture and horticulture, whether in the vicinity of these museums or elsewhere, are invited to contribute to them specimens of vegetable productions of every kind, as well as of manufactured produce. The inspection of the different samples of grain in these museums by farmers is, without doubt, the principal cause of the eagerness for improved varieties of wheats, noticed above as a decided mark of progress. Twenty years ago, the farmers of East Lothian and Berwickshire, then, as now, the best cultivators in the world, regarded the improvement of their art, by attention to such minutiæ as the shades of difference between varieties of wheat, as beneath their notice; but they have now learned to calculate with Col. Le Couteur, the number of grains to an ounce in different varieties, and the consequent difference of produce of an acre or a field, according to the variety used.

Rural Architecture, we have the evidence of an eminent architect for stating, is undergoing rapid improvement in many parts of England; and it is very gratifying to us to learn, on the same authority (see George Godwin, Esq., jun., in *Arch. Mag.*, vol. iv. p. 484.), that much of this improvement may be traced to the extensive circulation of our *Encyclopædia of Cottage, Farm, and Villa Architecture* among country gentlemen and provincial builders.

In Domestic Economy, we may notice the mode of burning the steam produced by the boilers, and by the operation of washing, in wash-houses, and which is found greatly to increase the effect of the fuel. (See p. 370.) In the proper place, we have directed attention to the *Magazine of Domestic Economy*, as a periodical calculated to do much good.

Railroads. — That between Birmingham and Liverpool is now completed, and the line between Birmingham and London is far advanced. When the whole is complete, gardeners will have an easy opportunity of visiting the four best provincial botanical and horticultural gardens in England, at a moderate cost, and in a very short time; viz., those of Birmingham, Sheffield, Manchester, and Liverpool. The Bristol railroad will be completed in a year, on the line of which are: Drop-

more, with its pinetum and flower-garden, both unrivalled in England; White Knights, long celebrated for its trees and shrubs; High Clere, for its splendid scenery, its general collection, and especially its hybrid rhododendrons and azaleas; the public gardens commenced at Bath and Bristol; and the Bristol Nursery. The Southampton railway, which it is said will be finished in two years, will enable the London gardener to visit the Goldworth Arboretum, and the splendid collection of American plants in the Knaphill Nursery, and return in the same day. When the railroad is extended from Liverpool to Glasgow and Edinburgh, the principal public gardens of Britain may be visited in as many days as it now requires weeks.

GARDENING AND RURAL IMPROVEMENT IN FOREIGN COUNTRIES.

All accounts agree, that gardening is at present in a very low state in France. (See p. 461.) In Belgium, the cultivation of plants to be exhibited for prizes continues to be pursued with vigour (see p. 82.); but Frankfort, Berlin, Munich, and Vienna are now, as they have been for several years past, the places where the enjoyments to be derived from gardening are most highly valued. The prizes offered, both in France and in Holland, for the improvement of the science of gardening and of agriculture, are well deserving notice (see p. 462--465.); and also the comparative view of the past and present state of horticulture in Denmark (see p. 466.). In the United States, gardening has received a temporary check from the general commercial difficulties of the country, which, however, a year or two will be sufficient to overcome. In British America, we have noticed (p. 467.) a splendid example in the neighbourhood of Quebec. In Australia, at Sydney, lectures have been delivered, and a book published on landscape-gardening, by the late Mr. Shepherd; and the most beautiful residence in the colony is, as it ought to be, that of the late Secretary to the Linnæan Society, our early and much esteemed friend, Alexander M'Leay. (See p. 587.)

OBITUARY.

Joseph Sabine, Esq., F.R.S., &c. (who, though not the originator of the Horticultural Society, was undoubtedly the founder of its celebrity and usefulness), died in the course of the year; and we have done justice to his memory in the proper place; as we have to that of the eminent botanist Persoon; of our friend M. Fischer, the director of the Botanic Garden at Göttingen, generally esteemed both as a gardener and a man; and Mr. Hay, an eminent garden architect, who has contributed much to the improvement of walled gardens and hot-houses in Scotland.

ART. II. *Report on the hardy Fruits for the Year* 1837; *with some preliminary Observations on Climate.* By ROBERT THOMPSON, Fruit-Gardener to the Horticultural Society in their Garden at Chiswick.

A VERY remarkable season has been experienced since I formerly communicated some notices respecting fruits, published in your Magazine for December, 1836; and a few remarks on the same, and on resulting consequences as regards fruits, may not be inappropriately adduced in now attempting a similar account of such kinds as have come under my farther observation, as deserving of particular attention: such being made agreeably to the permission previously granted by a council of the Horticultural Society for furnishing those accounts.

The spring of 1836 was late; but it was succeeded by three fine months up to September, when weather more like that of the end than the beginning of autumn set in: cold, cloudy, frequently boisterous, and very wet. Nor were the hopes realised that bad weather coming on thus early would soon clear up, and be followed by a good autumn; for October was most remarkably cold, with much rain, and even frost and snow. The flowers of the dahlias were cut off by about 4° Fahr. of frost, as early as the 4th of October; and, on the morning of the 29th, the ground was covered with snow to the depth of 3 in. This arrested vegetation as far as regarded deciduous trees and shrubs; and, to many species, such as the vine and fig, the action was more especially premature: the former, where growing in the open ground, had its leaves green; and, at the same time, its shoots were so immature, owing to the previously moist and clouded state of the atmosphere, that the pith, in the course of the winter, became more or less blackened down to the old wood; and nurserymen found a difficulty in obtaining sufficiently sound eyes for the purposes of propagation.

January and February last were not unusually severe. March forwarded vegetation but little: it was even 4° colder than February; and, with the month last mentioned, April, notwithstanding the great difference in the length of the days, was only of equal temperature; the mean of the external air being as low as 41½° Fahr.; consequently, the sap of plants, water being in it the principal constituent, could not have much elasticity. The sun was almost constantly obscured, and the foliage of many exotics acquired a yellow tinge; for, although plants under glass could be protected from the cold, yet the want of solar light was not to be supplied, or artificially substituted; this being one of the desiderata in the science of horticulture, which most probably, will ever remain so. Owing to the want of solar heat, the range of temperature had not its usual extent; nor were its oscillations

sufficient to effect the usual diurnal transition or expansion of the cold vapour in the lower stratum of the atmosphere, which, consequently, remained almost stationary, night and day, near the surface of the earth. (Influenza, at the same time, became exceedingly prevalent; but, whether originating in, or being connected with, this unusual state of the atmosphere, although a seeming consequence, is not pretended to be affirmed.) The progress of vegetation was, for the greatest part of the month, more effectually arrested than it was, perhaps, ever known to be in April. From the *steady* cold, it was much in the same state as a clock, of which the pendulum had ceased to oscillate; or it was in a similar state to that in which exotics sometimes are made to linger, or may be positively destroyed, by ill-directed *care;* that is, their being kept in a state closely approaching to uniform temperature: for it would probably not be too much to affirm, that, if any species of vegetation, except, perhaps, some of the cryptogamous plants, were kept at an undeviating temperature, whether high or low, or even corresponding with the mean of the natural climate of the individual, such would eventually die prematurely. Differently constituted species, of course, admit not only of greater or less mean temperature, but also of a greater or less range. Thus, an inhabitant of a sheltered situation, in the bosom of a wood, where it never suffered the full effects of the noon-day heat, nor the midnight cold, would not thrive if removed to a situation where it would be subjected to both these vicissitudes, alongside of the thriving productions of the open fields.

It would therefore appear to be desirable, if the range of temperature in shady woods, compared with that of the open country in the same latitudes, were better known. It may, indeed, be questionable, whether a single instance is on record of such being any where known at the present time; not even within those tropical forests on the tops of which the sun darts perpendicularly his fiercest rays, yet cannot penetrate directly through the dense foliage to the thus sheltered vegetation below, amongst which the interesting tribes of *Orchidàceæ* flourish.

The digression into which I have been led from some remarks connected with the peculiar state of the atmosphere in April is, I fear, already of inexcusable length; and I can only hope to be excused for not directly returning to my subject by endeavouring to submit to the consideration of the reader some farther observations, which may be improved on, so as to tend, in some degree, to the obviating of existing difficulties in regard to certain points in horticulture.

It would be well if the ranges of temperature of summer and winter, and of day and night, were more accurately known as relates to plants brought under cultivation; for then the limits of

danger in this important respect would no longer be matters of doubt; they would become clearly defined, leaving intermediately the path of safety, in which the most inexperienced could scarcely err. It is true that many productions, fostered by the hand of Experience, are at the present time brought, apparently, to the utmost perfection; but, in other instances, the same cultivator will meet with repeated failures, without being able to account for such. The time may not be far distant, when the question, "How is this?" will admit of an easy solution; for, when the above limits, as well as those of moisture and dryness, light and shade, are clearly understood, failures will be of rare occurrence; or, when they do occur, will be referrible to some unavoidable accident.

If a wild plant, indigenous to the neighbourhood of London, were to be artificially treated, or committed to horticultural care, it would be found to live longest in a temperature corresponding with that of the average of the respective seasons of the climate of London; and that temperature, or gradations of temperature, in which a plant will live longest must, certainly, be the most congenial. It might be made to grow excessively luxuriant for a season or seasons; but this would be at the expense of its vital powers. For instance, excessive heat and moisture might be applied (I do not mean anything like a tropical heat, but equal to, or greater than, that of our hottest summers): an excessive growth would be the consequence; and, if continued, the plant would ultimately outgrow itself; or if, previously to its termination, the over-exciting causes were reduced to a medium, or perfectly natural degree of stimulus, the exhaustion would appear afterwards by a *less* than medium developement, in proportion to the excess of former luxuriance. It is scarcely necessary to explain that the above statement is to be understood chiefly as regards the climate, and not other points of culture; nor to imply that a plant will not thrive better, and live longer, when freed from the troublesome neighbours of its own or other species in its wild state. Farther, I will venture to say, that, in four seasons of equal temperature, and that temperature agreeing with the general mean of the climate, the growth of indigenous forest trees will be greater (other circumstances being the same) than in four years alternately hot and cold; although *they* may *average* the same as the four of equable mean temperature. If this be not the case, then the inference would be, that plants have not been originally well adapted for their respective localities.

The average heat of day and night being now pretty well known in the climate of London, throughout every month in the year, and for a long series of years, it follows, if the above statements be correct, that we also know the *exact* limits of the extremes which all indigenous plants will safely bear; and one

of the greatest desiderata in horticultural knowledge now is, a similar knowledge of all other climates whence vegetable productions are imported for cultivation, in order that their range of temperature may, in like manner, be precisely ascertained. But, notwithstanding the rapid advances of science, and the accelerations of intercourse by steam or railroad communication, this must require a lapse of years. In the mean time, some approximation might be attainable, and rendered useful, by improving on the following considerations.

The astonishing power which causes once in twenty-four hours a general movement, more or less, of the sap of vegetation, in that expanding in the tropics, as well as in that of the humble inhabitants of the polar regions, is well known to be derived from the solar rays. The effect of the latter is more or less energetic, according to the quantity received by the surface of the earth; and this is regulated by the greater or less obliquity of the latter to their direct or perpendicular influence; or, in other words, is *in proportion to the square of the cosine of the latitude.* A calculation thus deduced would not be absolutely correct for the purposes of cultivation; but, it would certainly form the surest basis relatively to which corrections could be made; such as the diminution due to elevation, &c. The ratio which the calculation would bear to the degrees of Fahrenheit's thermometer should then be ascertained; and, if it could be corroborated by actual observations made by this instrument, at every 10° of latitude, so much the better. For ultra-tropical regions more especially, the table might usefully exhibit four divisions: first, the temperature at the vernal equinox, which would be found lower than the mean of the season, from the earth still retaining in part the low temperature of winter; secondly, the temperature at the autumnal equinox, which would be, for the contrary reason, as much warmer than the mean as the vernal was colder; thirdly and fourthly, the temperatures at the summer and winter solstices. These tables might, also, be exhibited on the margins of isothermal maps; which, for greater accuracy, might contain sections of the earth's surface included by every 15° of longitude; and, if fifteen pages of the *Gardener's Magazine* were so occupied, it would, I am convinced, form a useful reference for the *range of annual temperature*: and, to make it still more complete, a table might be subjoined for that of the *diurnal temperature*, nearly which the plants of every latitude naturally undergo.

That, in regard to cultivation, we ought to "imitate nature," is an expression universally assented to; and, that we cannot do so without some knowledge of her workings, cannot be denied; and the more correct that knowledge is, the more definite will be the aim, and the greater the degree of perfection, of our

imitation, and proportionally our success. Now, we know that plants naturally experience a range of temperature: but this, in regard to them, we cannot perfectly imitate; because it is only imperfectly known. That we hence labour under a disadvantage, follows as a truism; but, whether the above suggestions are calculated to obviate such, or to lead to others of higher merit, I submit to better judges of the subject.

With regard to the effect of the coldness of last spring in retarding the expansion of buds into leaves and blossoms, it may be stated to have occasioned a difference of three or four weeks beyond the usual period in the generality of deciduous species. For example, —

	1834.	1835.	1836.	1837.
The common hawthorn was in leaf - - -	March 28.	April 1.	March 30.	April 28.
The horsechestnut *, ditto -	April 8.	April 12.	April 24.	May 3.
The green gage plum was in blossom - - -	March 28.	April 8.	April 18.	May 3.
The May duke cherry, ditto	April 18.	April 17.	May 1.	May 16.
The common beech, in leaf -	May 4.	May 10.	May 10.	May 13.

It appears, from the above periodic differences, that, although vegetation may exhibit, in some measure, by its earlier or later developement, the general state of the temperature, yet it will not do so in a just ratio for any particular month. Some species will burst forth into leaf or flower in consequence of a few days of powerful sun heat; whilst others, such as the beech, are not possessed of such susceptibility; a property which, as regards many varieties of fruits, is in this climate, with regret, too well known. Many other causes tend to interfere with the influence of atmospheric heat in the developement of vegetation, although it must be allowed to be the principal agent. Among others, the greater or less prevalence of rain, in a warm or cold state, and, accordingly, more or less congenial to the action of vegetation, may be mentioned.

It is now time to leave the month of April, and this with one remark, that it was the coldest of any corresponding month for at least the last 40 years, according to the registers published in the *Transactions of the Horticultural Society*, and in Howard's *Climate of London*. The process from which it derived its name (*aperio*, to open) was chiefly transferred to May; and even then sharp frosts injured many of the blossoms. Apricots, peaches, and even pears on walls, suffered considerably, as did also those of the latter on standards. Cherries were an abundant crop, as were likewise plums and apples. The summer weather was, of course, rendered short by the prolongation of the cold in the

* The buds of this tree burst forth so rapidly and simultaneously, that it is, in consequence, particularly eligible for the purpose of being quoted, in regard to the period of foliation.

early part; and, though tolerably fine, yet there was a great deficiency of sun heat in July; consequently, many kinds of fruits did not acquire their perfect flavour. This appears to have been more especially the case with all the summer and autumn apples. The long-keeping sorts may, perhaps, be found to have benefited, by their hanging longer in the enjoyment of the subsequent brighter weather in October.

Among the productions of last season that have come under my observation, one of the most deserving is a grape, received into the collection of the Horticultural Society, under the designation of "seedling from bloom raisin:" it was grafted, if not exactly after the mode, yet according to the principle, recommended by Mr. Gowans (see p. 117.), alongside of a black Hamburg; and it ripened nearly a month earlier than the latter sort. The bunch is as large, but more loose, and the berries acquire a blacker colour, and higher flavour. Its value as an early forcing grape will hence be readily appreciated.

Several of the pears lately raised by Thomas Andrew Knight, Esq., have fruited in the garden of the Horticultural Society in the present season, and have proved excellent. As they are hardy, they cannot be too highly recommended for trial in the northern counties, where even the Belgic varieties fail. The Althorp crassane was exceedingly buttery, melting, and highly flavoured. The Brougham pear is a great bearer, and very good. The Belmont and Eyewood, excellent. The winter crassane has also produced abundantly, and will, doubtless, prove deserving of the high opinion formed of it last season by all who tasted it: the flavour, even from a standard (for it does not seem to require a wall), was pronounced fully equal to that of the old crassane, and with much less grittiness. These are only a few: others remain to be tried farther in the winter, and in spring; and many more of similar origin have yet to be fruited. This early notice will, it is hoped, prove satisfactory to the numerous enquirers after these fruits in the colder parts of the kingdom.

Most of the principal Belgic pears are now pretty generally known; perhaps the Fondante d'Automne is not so extensively distributed as it ought to be; like most autumn fruits, its perfections are not of long duration, yet it is so exceedingly rich and delicious that it ought to be in every private collection. It bears very well as a standard. The Fondante Van Mons is also well deserving of notice; although scarcely equal to the preceding, yet it is of excellent quality. The Styrian is beautiful, and seems worthy of trial on a wall. The Nelis d'Hiver is gaining favour; it is rare to find perfect unanimity of opinion on the merits of fruits, but all seem to agree in regard to the superior excellence of this pear. The Beurré Bosc maintains its cha-

racter of being higher flavoured than the Marie Louise. And the latter has also another rival in the Louise Bonne (of Jersey), particularly in the north of England, as I am very credibly informed.

Of Plums, none appear to exceed in flavour the Reine Claude Violette. Pond's Seedling is a very large and handsome red fruit, deserving cultivation. The Ickworth Impératrice, raised by Mr. Knight, has fruited for the first time in this garden, and is very excellent; it is rather earlier than the old Impératrice, much larger, and richer. Coe's fine late red has been ascertained to be the same as the St. Martin Rouge of the French.

A very handsome plum, grown by Mr. Denyer, and called by the popular name of Queen Victoria, has been seen. A notice of this, on the cover of the *Gardener's Magazine* for November, requires some correction. I must be understood to have said that it resembled the red Magnum Bonum only in size; for, in other respects, it is very different. It has most resemblance to Sharp's Emperor; and both have the peculiarity of a remarkably tender stone. It is very large, roundish oval, red, with a fine bloom. It may be a distinct sort, or it may not; but, however that may be, Mr. Denyer acknowledges, very honourably, that he did not raise it, but obtained it without a name, and, as it deserves, has brought it into notice.

In the general season of Cherries, none exceed in flavour the Elton and Downton. Among a collection of German sorts, received from Dr. Diel of Nassau, there is one which deserves to be made known on account of its lateness; for it was hanging on the tree, without being in the least shrivelled, when the frost became severe at the end of October. It was received under the name of "Büttner's October Sucker Weichsel;" it is not, however, a sweet cherry, and might be called Büttner's October Morello. It is, externally and internally, of the colour of a Morello, but of a rounder form; the flavour is much the same, and it will, doubtless, be found to answer all the purposes of the Morello, whilst it may be gathered fresh from a standard two months later.

ART. III. *An Account of some Trials made with the Leaves of the common Laurel, for destroying Insects.* By J. H. A.

HAVING read, in the *Gardener's Magazine*, an account of a method of destroying the different insects that infest plants, taken from a paper read before the Horticultural Society, I was induced to give it a trial, as the means stated were so simple. I accordingly procured a quantity of laurel leaves; and, having well bruised them, spread them in the evening on

the floor of a small stove. On the following day, at noon, I was surprised to see all the young leaves of some vines under the rafters appear as though scorched; and, upon further examination, I found many of the stove plants affected in the same manner: the euphorbias, in a few days, lost nearly all their leaves; and the gesnerias, gloxinias, &c., though they did not lose their leaves, yet presented a very unsightly appearance. I immediately concluded that this was caused by the odour of the laurel leaves, and instantly swept them all out of the house; but, to be sure of the matter, I took a plant of pelargonium and placed it under a hand-glass with a quantity of the bruised laurel leaves, and on the following morning it presented precisely the same appearance as the plants in the stove; which satisfied me of the injurious effects of the laurel leaves upon vegetation, though, at the same time, they were incapable of destroying the mealy bug, which was the insect I was chiefly annoyed with. I send you this account, that you may, if you think fit, publish it as a contradiction to the assertion, that the odour of laurel leaves will not injure plants; and thus prevent other gardeners from falling into the same error that I have done.

Bromley, Kent, Oct. 25. 1837.

Art. IV. *Provincial Horticultural Societies.*

Bedfordshire. — *Bedfordshire Open Horticultural Society. — May* 9. Notwithstanding the hitherto unfavourable season for vegetation, the specimens shown were extremely fine. One of the Brugmánsia sanguínea was much admired; some sticks of rhubarb shown by Mr. Webster, about 2 ft. long, also attracted considerable attention. The best auriculas were Howland's Nelson, Surpass, and Ringleader, shown by Mr. H. Pullen. The best hycacinth was the Groot Voorst shown by Mr. Barringer. (*Huntingdon Gazette*, May 13. 1837.)

Bedford Horticultural Society. — Aug. 4. The rich collection of plants, &c., from the conservatory of W. H. Whitbread, Esq., attracted great admiration. The dahlias in some instances were particularly fine; as were the carnations. Mr Giddings's seedling yellow picotee was named by the chairman, G. Livius, Esq., the Marchioness of Tavistock; and the best seedling ditto of Mr. Truelove, was named the Queen. The gooseberries were very fine. Among the prizes, were for fruit, for the best pound of red currants, containing the least number of bunches, Mr. Giddings (21 bunches); the best pound of white ditto, Mr. Giddings (27 ditto); the best half-pound of black ditto, containing the least number of berries, Miss Goulburn (141); the best half-pound of raspberries, fewest in number, stems cut close to the calyx, Mr. Pullen (57). (*The Beacon*, Aug. 12. 1837.)

Biggleswade Horticultural Society. — May 8. This was the annual show for auriculas and polyanthuses. The best auricula, Howard's Nelson, was shown by Mr. Pullen; and the best polyanthus, Alexander, by Mr. Garratt. (*Huntingdon Gazette*, May 13. 1837.)

Berkshire. — *Reading Horticultural Society. — May* 18. Among the plants exhibited were a very superb seedling scarlet rhododendron; a fine plant of the Cliánthus puníceus, and one of Tropæ'olum tricolòrum, from the collection of W. Stephens, Esq.; and calceolarias from Purley Hall, &c. The grapes from

the gardens of J. P. Anderdon, Esq., and James Wheble, Esq., were exceedingly fine. The numerous collections of flowers, green-house plants, &c., exhibited by the various florists and nurserymen of the town and neighbourhood were of the best and choicest descriptions, and were highly ornamental. (*Salisbury Herald*, May 27.)

Kingsbury Melon Show. — Aug. 18. Mr. Whale, gardener at Elcot Park, won a prize for the best-flavoured green-flesh melon, making his 150th prize for melons.

Cambridgeshire. — *Cambridgeshire Horticultural Society. — May* 17. The pelargoniums were excellent, but there were no tulips on account of the backwardness of the season. The vegetables were also very fine. There were numerous prizes, among which were sixteen to cottagers.

Cambridge Dahlia Show. — Sept. 9. Above 1000 flowers were exhibited. Mr. Widnall gained the first prize.

Wisbeach Floricultural and Horticultural Society. — June. The articles exhibited were not so numerous as usual.

Cheshire. — *Chester Floricultural Society. — Aug.* 2. The carnations were remarkably fine. The first prize for dahlias was won by Messrs. Dickson.

Cornwall. — *Royal Horticultural Society of Cornwall. — May* 24. The assortment of apples of last year's growth was of a superior description, and appeared to have been preserved with great care, many of the kinds seeming as plump and fresh as if they had been recently taken from the tree. The show of flowers was exceedingly good, and comprised some beautiful varieties of pelargoniums, calceolarias, ixias, ranunculuses, heartsease, &c. Among the rare productions we particularly remarked a splendid specimen, in flower, of Crínum amábile, from the collection of L. C. Daubuz, Esq.; and Oncídium altíssimum, from Sir Charles Lemon, Bart., who also forwarded to the meeting fourteen different sorts of cactuses, which were stated to be part of a collection lately sent to this country from Real del Monte, by Mr. John Rule. Several of the kinds are believed to be new, and their singular appearance attracted general notice. We think it will be gratifying to the members of the society to learn that, in the course of another season, there is every probability of Mr. Rule adding to our collection some of the evergreen oaks, which contribute so much to the beauty and interest of the mountain scenery of South America. The elevated and cold situations in which these oaks are found, induces us to believe that they may be successfully cultivated in this county. The vegetables comprised some excellent samples of potatoes, kidneybeans, asparagus, spinach, and mushrooms. In this class the baskets exhibited by market-gardeners, as well as by cottagers, were very superior, and deserving of great praise. In indigenous botany, we had the pleasure of seeing a plant of Prímula farinòsa, which has been added to the Cornish flora by Mrs. T. Grylls of Cardynham, who discovered it lately growing near Bodmin. The nurserymen's show in the card-room attracted particular attention. We were much gratified in beholding the splendid bloom of pelargoniums, exhibited by Mr. Rendle, Union Road, Plymouth. Among his collection we particularly noticed Rendle's Alarm, one of his seedlings of 1836; we think this flower is very much superior to Perfection, owing to its beautiful form, the fine dark spot, and the splendid white centre. Rendle's Mountain Sylph we also noticed; this flower is beyond doubt the finest-formed white pelargonium now in cultivation. Among other specimens of flowers, we were much struck with the splendour and unique beauty of Schizánthus Rendliàna. Mr. Pontey, of the Plymouth Nursery, had a fine display of pelargoniums, and also a very choice collection of ericas and New Holland plants. Among his general collection we noticed a splendid show of tulips, ranunculuses, anemones; a most select collection of heartsease; also ixias, and a splendid amaryllis of the hybrid kind, raised by himself. We also observed from the nursery of Mr. James Paull, of Grampound, some fine kalmias, azaleas, ledums, and rhododendrons, which sold well. (*The West Briton*, May 26. 1837.)

July 19. Sir Charles Lemon in his speech first noticed some of the finest plants exhibited; he next called the attention of the meeting to the produce of the cottage gardens. In this most interesting department, great exertions had evidently been made; and the result might fairly be placed in competition with the productions of those who had greater opportunities. Sir Charles also announced to the meeting that two cases of plants had been received from Dr. Wallich, as an acknowledgement of their having elected him an honorary member of the society. He regretted to say that only a few of the plants had survived the voyage, but among them were some Epiphytes of great rarity. They are now being taken care of at Carclew, until the committee determine how they are to be disposed of among the members. Sir C. L. then read the form of an address to Her Majesty, requesting that she would condescend to become the Patroness of the Society, which was carried unanimously. The secretary then read the list of prizes awarded, which were very numerous. (*The West Briton*, July 21. 1837.)

October 4. This was the last exhibition for the season. The flowers were very fine, particularly the dahlias, fuchsias, calceolarias, marigolds, and German asters. The supply of stove plants was small. The fruit exhibited included many excellent varieties of apples, pears, pines, melons, and grapes; and there were a few fine raspberries and strawberries. The productions of the cottagers, especially their cabbages, onions, potatoes, and carrots, as well as several large and well assorted nosegays, were superior to those of any former exhibition, and excited great approbation. A number of rare and beautiful plants were exhibited; and the collection of dried plants shown by Miss Warren, consisting of ninety-one species, many of which were peculiar to this county, called forth general admiration. At two o'clock E. W. W. Pendarves, Esq., M. P., was called to the chair, and addressed the company in an appropriate speech. After pointing out such objects as appeared most worthy of attention, Mr. Pendarves mentioned that, about two years ago, Mr. T. A. Knight, who was president of the Horticultural Society of England, on making enquiry in the London markets, found the greater supply of early potatoes was furnished from Penzance and its neighbourhood. Mr. Knight had made some experiments in early potatoes, which he found extremely successful, and had given him some sorts, which he (Mr. P.) had cultivated. Sir Charles Lemon had some last year, which he had also cultivated, and he had in his hand some notes on potatoes received from Mr. Knight, drawn up by Mr. Booth, the gardener of Sir Charles Lemon, that he would read to them. The honourable gentleman then read the following account of the produce of Mr. Knight's potatoes: — "No. 2. A very early and productive sort, of dwarf growth; weight when planted, 10 lb., weight of produce 127 lb. The sets were placed whole at 6 in. from centre to centre, 9 in. deep, with spaces of 27 in. between the rows. The rate of increase is $12\frac{3}{4}$ to 1, or $488\frac{1}{2}$ bushels, (each of 74 lb. per acre.) No. 4. This is also an early variety, but not so productive as the above sort; weight when planted 6 lb., weight of produce 67 lb.; whole sets placed as those above, with spaces of 2 ft. between the rows. Rate of increase 11 to 1, or 182 bushels per acre. No. 5. This is also an early sort; weight when planted 7 lb., weight of produce 60 lb., or $163\frac{1}{2}$ bushels per acre. No. 6. Equally early with the preceding; sets placed as those of the above sort, with spaces of 18 in. between the rows; weight when planted 6 lb., weight of produce 53 lb. nearly 9 to 1 increase, or 144 bushels per acre. No. 8. Mr. Knight said that this variety afforded (in the year 1835) a produce annually, and equivalent to 28 tons per statute acre; weight when planted this season 10 lb., weight of produce 143 lb. Increase 14 to 1, or 425 bushels per acre. No. 16. Downton Yam. This is a very strong-growing sort, fit for field culture. Mr. Knight says it is excellent in spring, and the early part of summer; weight when planted 5 lb., weight of produce 52 lb. Whole tubers placed at 6 in. from centre to centre, 9 in. deep, with spaces of 3 ft. between the rows. Increase 10 to 1, or 850 bushels per acre. Yellow Kidney. Weight when

planted, 10 lb., weight of produce, 116 lb.; placed the same distance, and depth as those above, with spaces of 27 in. between the rows. Produce at the rate of 506 bushels per acre. The above varieties of potatoes were planted upon a newly trenched border, where a large quantity of the subsoil had been turned up and mixed with the surface soil; had the ground been richer, I have no doubt the crop would have been much larger. The sorts were planted with whole sets, which I find produces a much greater quantity of small tubers than when cut potatoes are planted. Numerous prizes were given for cultivated flowers, fruit, and vegetables; and also for every plant belonging to the British Flora, but not hitherto known to grow in Cornwall, of which satisfactory evidence can be given, that it has been found in a Cornish locality (*Erìca cinèrea* var. monstròsa) found in the woods at Carclew by Mr. Lewis Fox, Perranwharf. For the best collection of dried Cornish plants, to supply those wanted for the Hortus Siccus, to Mr. C. A. Johns, Helston, of which eight have been now first found in Cornish localities. For the best collection of dried plants, not peculiar to Cornwall, for the general Herbarium, to Miss Warren. For the best collection of Cryptogamous plants, to Mr. William Lobb, Feock; these are beautifully dried, and apparently very perfect specimens. A very beautiful collection of dried plants, presented by Mr. Rogers, containing many excellent specimens of the most rare plants of Great Britain, and more than fifty that were wanted for their Herbarium. In the card-room there was, as usual, a large and beautiful display of flowers, chiefly dahlias, by Mr. Fox of Penzance, Mr. Pontey of Plymouth, and Mr. Veitch of Exeter, nurserymen. Mr. William Rendle, of the Union Road Nursery, Plymouth, as usual, exhibited a grand display of dahlias, and other flowers; the dahlias were really splendid, comprising all the newest and best sorts at present in cultivation. One named Phidias, was very peculiar, being striped and mottled with deep red and yellow, in the way of a carnation: and a splendid seedling named "Rendle's Glory of Plymouth;" it is the exact form of Springfield's Rival, but much larger, having a clear white ground, with a deep edging of purple. Mr. Rendle also exhibited some good specimens of several new flowering plants, among which was *Verbèna Arraniàna* (which, we believe, is the first specimen exhibited in England), a very desirable plant to the flower garden; it is a shrubby variety, like *V.* Tweediàna, but the colour is of a deep purple, and it has a beautiful downy foliage. (*The West Briton*, Oct. 6. 1837.)

St. Columb Cottage Gardening Society.—Sept. 26. The room for the exhibition of the vegetables, by the cottagers, was neatly and tastefully decorated with arches of laurel covered with flowers, the gift of Captain Rogers, R. N., who has taken a warm interest in the welfare of this society; and in an adjoining room were laid out some very fine fruits and vegetables from the gardens of the gentlemen of the town and neighbourhood, among which were some choice cherries, currants, and apples, from the Rev. J. Trefusis; some fine grapes, from Mr. E. George, of Trewan; some very large turnips from Mr. Geake; and some good specimens of the white stone turnips from Mr. S. Tabb. This room was filled with beautiful and magnificent bouquets of flowers and plants, kindly sent from Carnanton, Trekenning, and the Parsonage. The doors were thrown open at twelve, when the room was immediately filled; and at one o'clock Captain Rogers was unanimously called to the chair: who, in a short, but able speech addressed the meeting. The suggestions and advice which he gave the cottagers were truly good, as well as the wish expressed by him and the committee in their report, for the aid and assistance of the farmers and landowners, not merely by giving their subscriptions, but also by allotting land to the cottagers for cultivation. The Rev. H. Stoneman, and Humphry Williams, Esq., then addressed the meeting, expressing similar sentiments; after which J. B. Collins, Esq., the secretary, read the report (which expressed the wish of the committee, that the adjacent parishes might be induced to join it), and a long list of prizes. (*Ibid.*)

Cumberland.—*Whitehaven Horticultural Show.*—*May* 11. The auriculas were good, being not much inferior to any of the Society's previous exhibitions; in green-house plants there was a visible falling off; but in the more useful, or vegetable department, embracing cucumbers, cabbages, broccoli, rhubarb, &c., the display far exceeded expectation. The dessert and kitchen apples were as good as when taken from the trees, and the former still retained their wonted flavour. Mr. R. Elliot won both the prizes for the best pan of auriculas, to consist of one flower of each class. Among the vegetables were some new potatoes by T. Falco, Esq. (*Cumberland Pacquet*, May 16. 1837.)

June 8. The tulips were by far the best ever exhibited at Whitehaven. The bouquet of Mrs. Solomon, of Roseneath; that of Mr. Gaitskell, of Hall Santon; the plants of Mr. Thornthwaite, of Keswick; and the pelargoniums of Mr. Miller; were very fine. Pansies were in great variety and in as great perfection. The kitchen apples of John Harrison, Esq., and the potatoes of Mr. R. Elliot were greatly admired. (*Ibid.*, June 13.)

August 17. It was somewhat too late for carnations, still the show of these flowers was very good. The exhibition of dahlias was unprecedentedly large, and far exceeded any previous show in splendour and variety. In green-house and stove plants there was a falling off as compared with some previous exhibitions. Fruit of all kinds was particularly fine. Among the prizes were the following: — Carnations: Scarlet bizarre, Gird's Grand Monarch, Mr. W. Gird; purple bizarre, William Sawyers, Mr. H. Gird; purple flake, Gird's Mary Gird, Mr. H. Gird. Picotees: Purple, Hufton's Miss Emma, and Boothman's Princess Victoria, Mr. W. Gird. Among the fruit were currants, half a pound in the fewest bunches: Red, Mr. Elliot, 60 bunches; white, 41 bunches. Gooseberries, heaviest: White, Mr. Ellwood, 12 dwts.; green, Mr. Ellwood, 10 dwts.. Apples of 1835 and 1836 Miss Crosthwaite (Fisher's Green); apples, Mr. R. Elliot (Carlisle codlin). Calceolarias, eight varieties, Mr. Randleson; Fúchs*ia* Thómpson*i*, Mr. A. Spittall. (*Ibid.*, Aug.)

Derbyshire.—*Derby and Derbyshire Floricultural and Horticultural Society.*—*August* 15. This show was for carnations and picotees.

Chesterfield Horticultural Society.—*May* 16. This show was for auriculas, and hyacinths; but there were also numerous specimens of fruit and vegetables.

Devonshire.—*The Royal Devon and Cornwall Botanical and Horticultural Society.*—*May* 18. The plants, &c., were tastefully arranged on benches erected in the centre and by the side of the spacious room, and the upper end was decorated with evergreens, flowers, &c., in a style and splendour which displayed much taste and ingenuity. Among the prizes were one to Mr. J. Walter, Plympton, for apples of 1835; and others, to Mr. Noah Barry, Port Eliot, for lemons and citrons; to Mr. Burge, Coffleet, for ginger.

The display from the nurseries of Mr. Rendle, Mr. Pontey, and Mr. Wood, added greatly to the interest of the exhibition. Among the pelargoniums exhibited by Mr. Rendle were his seedlings, Alarm, and Mountain Sylph. Alarm resembles Perfection, it being equally as good in form, deeper colour, a finer spot, and free bloomer. Mountain Sylph is as round as a crown, and nearly the same size with a fine dark spot. We could only recognise among the group four old acquaintances; viz. Perfection, Gem, Bellissima, and Queen Bess. The ericas were in profusion, upwards of a hundred varieties in full bloom. Among the annuals was Schizánthus Rendli*ána*, the colour of which is of a deep purple with a fine white and yellow centre, with large dark brown spots. The various gold and silver Society's medals, which had been awarded to Mr. Rendle, were suspended near the various plants. Mr. Pontey sent five collections of stove and green-house plants; a superb collection of Cape ericas, upwards of fifty species in full bloom; and twenty-four pelargoniums of great beauty. (*Plymouth Weekly Journal*, May 25.)

Devon and Exeter Botanical and Horticultural Society.—*May* 12. Of fruits there were but very few specimens, consisting of strawberries, citrons, and apples, the long continuance of cold having delayed the ripening process.

The vegetables were highly creditable to the cottagers, who have wonderfully improved in the practice of horticulture since the establishment of this very useful society. The following choice plants from Mr. Veitch's nursery received the particular approval of the judges:— *V*erbèna Tweedi*àna*, Cliánthus puníceus, *C*lématis azùreus grandiflòrus, and Oncídium bifòlium ; and, from Mr. Hewitt's gardens, Brugmán*sia* sanguínea, a seedling heartsease, a superb *R*hododéndron caucásicum, and a collection of ericas and cactuses. (*The Western Luminary*, May 15. 1837.)

Sept. 14. The show of fruit, plants, and vegetables was very fine. At two o'clock N. Down, Esq., took the chair; and in the course of his address observed, that " the amelioration of the condition of the humble cottager has been considered by the committee a subject of so much importance, that a considerable share of their time and attention has been devoted to this interesting branch of our exhibitions; and we have reason to believe that many persons of this class have been reclaimed from habits of profligacy and intemperance, by the various rewards and encouragements which have been offered by us for the promotion of industry, and by the useful and practical treatises on gardening which we have dispersed among them." In accordance with this feeling, among the prizes, were the following awarded to cottagers for personal merit: — To the cottager or labourer with small weekly wages, who has reared the largest family in habits of industry, without parochial assistance: 1*l.* 10*s.* to David Pain, of Saltash, 76 years of age, reared ten children. To the cottager or labourer with small weekly wages, who cultivates his garden in a superior manner, the interior of whose cottage displays the greatest neatness and economy, and whose children are educated in habits of industry and sobriety : 10*s.* to John Davis, Elbarton. To the servant in the rural districts who has remained the largest number of years in the service of the same master or mistress, and whose conduct has been exemplary: 1*l.* to Robert Pawley, of St. Stephens by Saltash, 40 years' service. (*Plymouth Herald*, Sept. 16. 1837.)

Devonshire Floral Society.— May 4. Among the contributors, Mrs. Wells, of Cowley House, sent some magnificent specimens, of which were the Tropæ'olum tricolòrum, Cliánthus coccíneus, and Kennèdy*a* coccínea : also a very fine collection of roses. J. B. Sanders, Esq., exhibited a splendid specimen of *A*càcia armàta and a fine collection of green-house plants. Luke Ponsford, Esq., a magnificent collection of auriculas. S. T. Kekewich, Esq., a splendid seedling cactus, a collection of pansies, and a fine seedling mimulus. J. J. Tanner, Esq., a most beautiful collection of single anemones. R. Walker, Esq., a rich self-coloured auricula, and a very singular white polyanthus. Some fine specimens of pelargoniums were exhibited by Messrs. Meggs, Rowe, and Newbury. Mr. R. Webber, seedling polyanthus of great beauty. Mr. Veitch, of the Killerton and Mount Radford nurseries, had a most splendid collection of plants, amongst which were a very beautiful new Chinese azalea, with variegated flowers of the purest white and pink ; this plant has never before bloomed in this county, and was quite a centre of attraction. In the same collection we noticed some superb ericas, and some very fine auriculas, and a white Tropæ'olum tricolòrum, with from 500 to 600 flowers, which had the first and second prizes awarded them.

In Mr. C. Sclater's choice collection we observed Camèll*ia* japónica var. exímia, a fine red and very large and double seedling amaryllis, beautifully striped and veined with rich dark crimson. Mr. Charles Hewett exhibited a highly creditable collection of Cape ericas. (*Freeman's Exeter Flying Post*, May 11.)

Sept. 21. The show of plants and flowers were not on so large a scale as on former occasions ; but the dahlias, the principal object of attraction, were of a very superior description. Among the prizes was one for an ornamental design, a pheasant made of flowers, to Mr. Webber. (*Ibid.*, Sept. 28.)

Taunton and West Somerset Horticultural Society.— May 19. This was the first meeting of this society. The company was respectable, but not numerous. There was a very fine show of plants. Amongst the gentlemen's

gardeners, Mr. Duncan, the excellent and scientific gardener to R. F. Beauchamp, Esq., gained, and deservedly, the greatest number of prizes. Amongst the nurserymen, by far the greatest number of prizes were awarded to Messrs. Hammond and Stephens. The most striking specimen in the room was their Calceolària splèndida, raised by them last year. This remarkable plant had on it nearly 200 flowers, and was universally admitted to be the finest that has been shown in Taunton. It was sent off to London immediately after the show, to be exhibited in Messrs. Flannagan and Nutting's shop, Mansion-House Street. Messrs. Hammond and Stephens also exhibited two very large plants of Tropæ`olum tricolòrum, one of which measured 10ft. in height and 4ft. in width. Mr. Veitch had also a beautiful small plant of the same, but more fully in flower, which was truly splendid. The show was also much indebted to Mr. Veitch for many other new and beautiful creeping plants. Mr. Young obtained a prize for a fine collection of heaths, which were much admired and formed one of the most interesting objects in the room. (*Somerset County Gazette*, May 20.)

Sept. 22. Among the prizes were for nurserymen, Hammond and Stevens, dahlias, bouquet of; collection of; seedling dahlias; hardy annuals; each the first prize. John Young, ericas, extra prize; green-house plants, roses, ornamental basket of cut flowers; ditto of hardy plants; bouquet of dahlias; star of dahlias; each the first prize. Webber and Pierce, dahlias, awarded the first prize; but afterwards withdrawn, in consequence of their being brought after time. (*Western Flying Post*, Oct. 2. 1837.)

Dorsetshire. — *Sherborne and Yeovil Horticultural Society.* — *April* 26. Among the plants, we noticed a fine and venerable *Cyclamen pérsicum*, the property of Mr. Wellington, of Yeovil; its size and beauty attracted great attention, which was not abated from the fact that it had been in its owner's possession for the last forty years. The plants from Leweston and from Compton House were very numerous, and many of them exceedingly rare and beautiful. They were admirably arranged in tiers above the floor on opposite sides of the room, and certainly struck the spectator with admiration, both on entering, and after he had succeeded in reaching the centre of the room, where both collections could be viewed to very great advantage. Among the prizes were the following, for articles of superior merit, not specified: — To Mr. Spong, for mimuli in variety, Collínsia bícolor, Nemóphila insígnis, and Cliánthus puníceus; and to Mr. Wayman, for Brugmánsia. (*The Western Flying Post*, May 1. 1837.)

July 19. On no former occasion was the display excelled. The company were highly pleased with the arrangements of the committee of management, who very properly divided the exhibition into three classes; fruits, vegetables, and flowers, appropriating a room to each class. Among the prizes awarded were some to Mr. Clarke, gardener to Wyndham Goodden, Esq., for the best pine-apple, the best melon, the best raspberries, the best gooseberries, heaviest, and best flavoured, for extra peas, and for extra cockscombs; and others to Mr. Spong, gardener to Robert Gordon, Esq., for the best black grapes, for the best nectarines, for the best lettuces, for the best roses, for the best stove plants, and for the best cockscombs. Among the nurserymen Mr. J. Davison, of Sherborne, exhibited fine specimens of green-house and stove plants, &c. From Harris's nursery gardens of Upway there was a splendid collection; among which were some mottled balsams, Fúchsia mutábilis, grandiflòra (new), 100 different sorts of roses, and 100 splendid varieties of pansies. Mr. John Young, of Taunton, exhibited a splendid collection of Cape heaths, which appeared one mass of bloom. Lucombe, Pince, and Co., nurserymen, Exeter, exhibited a very splendid collection of plants, &c., and amongst which we particularly noticed the following: — Oncídium papílio and several other of the Orchidàceæ, Nepénthes distillatòria, many very fine specimens of cricas, three very splendid new pelargoniums, with many other choice plants; in one of their stoves they have a magnificent specimen of Mùsa Cavendíshii, fruiting in the very highest state of perfection. (*Ibid.*, July 24.)

Sept. 27. The arrangements in the floricultural department were beautiful, and the collection comprised the choicest specimens in dahlias, German asters, orchideous plants, green-house plants, coxcombs, balsams, and tender annuals. The display of fruits was of the first description; and numerous were the competitors under this head. The show of vegetables was also very fine, and conferred great merit on the producers. Amongst the fruit produced was a beautiful netted cantaloupe melon, from the garden of E. Murly, Esq., of Crewkerne, weighing 11 lb. 9 oz. From the garden of Messrs. Webber and Pierce, of Merriot, were exhibited some fine specimens of plants and cut flowers; among which we noticed the Passiflòra Loudoniàna, verbenas in great variety, and a splendid collection of dahlias, including every new variety, with some fine specimens of their own raising. Mr. George Parsons, nursery-man at Stalbridge, exhibited a box of dahlias, which was generally admired. (*Western Flying Post*, Oct. 2.)

Durham. — *South Durham Horticultural Society.* — *Aug.* 3. Among the prizes awarded were the following: — Best bunch white grapes to Jos. Cummings, gardener to Mrs. Hogg, of Norton; best green-flesh melon to Thomas Banks, gardener to Mr. Hustler, of Acklam; best red-flesh melon to Mr. Stephenson, gardener to Mr. Pease, M.P. (*Durham Chronicle*, Aug. 18.)

Essex. — *South Essex Horticultural and Floricultural Society.* — *July* 20. This exhibition was held in Wanstead Park. A fine specimen of Chamæ rops hùmilis, from the garden of J. J. Lyster, Esq., and a collection of orchideous plants from that of J. Alcard, Esq., were very much admired. (*Gardener's Gazette*, Aug. 26.)

Colchester Floricultural and Horticultural Society. — *Aug.* Mr. W. Cant gained the first prize for pelargoniums. (*Ibid.*)

Hadleigh Horticultural and Floricultural Society. — *July.* This was the first meeting of the society. The exhibition of fruit and flowers was excellent, and numerous prizes were awarded. ((*Ibid.*, July 22.)

Wingham Horticultural and Floricultural Society. — *July* 27. Was very numerously attended. (*Ibid.*, Aug.)

Gloucestershire. — *Bristol Horticultural Society.* *Aug.* 3. — Here was a splendid display of fruit, and also of carnations, picotees, and dahlias. (*Ibid.*)

Cheltenham Horticultural and Floricultural Society. — *Sept.* 5. The dahlias were very fine, as were the grapes. Mrs. Oldham won the first prize for flowers. (*Ibid.*, Sept.)

Cirencester Horticultural Association. — *June* 30. From the backwardness of the season there was not so large a supply of roses and pinks as usual; of other flowers there was a good show. The visiters were indebted to Mr. William Gregory and Mr. A. Smith for a supply of various plants and flowers, and also to Miss Smith for three baskets of flowers, very tastefully arranged. Among the prizes was one for roses, first prize, Charles Lawrence, Esq. (*Gloucester Journal*, July 8. 1837.)

Kingscote Horticultural Society. — *July* 4. The productions (including those of the cottagers) were excellent, considering the dearth which has existed for the last three weeks. Among the prizes were ranunculuses and pinks, Mr. Pillans; roses, best of any colour, Mr. Smart; pelargoniums, Mr. Pillans. (*Ibid.*)

Hampshire. — *Hampshire Horticultural Society.* *March.* The exhibition comprised a handsome stand of flowers, with apples and vegetables, from Sir Thomas Baring, Bart.; a capital collection of green-house plants, from the Rev. G. C. Rashleigh; Neapolitan violets from J. Fleming, Esq.; a large collection of stove and green-house plants, with a large assortment of apples and pears, from the Rev. Mr. Beadon; a variety of apples, asparagus, and mushrooms, from Lord Ashburton; apples and rhubarb, from Capt. Nevill; apples, cucumbers, sea-kale, asparagus, and potatoes, from J. Guitton, Esq.; citrons, limes, lemons, oranges, pears, apples, and vegetables, from the Duke of Buckingham; green-house plants, hyacinths, and asparagus, from Mr. W. N. Wickham. Numerous prizes were adjudged. (*Hampshire Chronicle*, March 20.)

Sept. 14. The vegetables were good, particularly potatoes from the Duke of Buckingham, and broccoli from Mr. Foster. The cut flowers were remarkably handsome: and a very superior collection of dahlias from Mr. Ingram of Southampton, and Mr. Taylor of Millbrook, were sent, though not for competition. The fruits, flowers, and vegetables, were from the gardens of the resident nobility and gentry. Mr. Shenton sent some new plants from the Swan River. Numerous prizes were awarded. (*Salisbury Herald*, Sept. 16.)

Andover Carnation Feast. — *August.* The flowers were numerous and very good; but Mr. Smith of Elmram was the only competitor for the fruits.

The annual Auricula Show was held at the Blue Boar Inn, Winchester, on Thursday last. The flowers exhibited were allowed to be the best ever shown, and reflected great credit on the cultivators. The maiden prize was awarded to Mr. Tibbs, and the seedling to Mr. Sheppard. (*Hampshire Independent*, April 29.)

Winchester Polyanthus Show — *April* 29. The first prize was awarded to Mr. Weaver, gardener to the Reverend the Warden of the College. There were two competitors for the maiden prize, Mr. Colson and Mr. A. Forster, both of Winchester; their pots were nearly matched, but that of Mr. Colson was considered superior. The other pots exhibited were excellent, particularly those shown by Mr. Weaver. (*Ibid.*)

HERTFORDSHIRE. — *Herts Horticultural Society.—April.* Among the pines at this exhibition, there was one (to which the first prize was adjudged), which deserved especial notice. It seems to differ from any pine hitherto known or cultivated in this country; it is of the black kind, and was, we believe, imported from the West Indies by Nathaniel Chauncy, Esq.; the plant is a free, but small grower; the fruit runs to 5 lbs. weight, is of a handsome globular shape, swelling out well, of light colour externally, with broad, flat, well-developed pips; it is very juicy, of excellent flavour, and is equal, if not superior, to the black Antigua, or the Jamaica pine. Collections of green-house plants, and fine specimens of heartseases, were sent by Mr. Francis, and Messrs. Paul, Nurserymen. Among the articles exhibited were a collection of terra cotta flower vases, from the pottery of Sir F. Fowke, at Lowesby, in Leicestershire, made in a great variety of classical designs, and sold for a trifling price. (*The Reformer*, May 2. 1837.)

June 22. Amongst the exhibitions we particularly noticed some fine specimens of *Orchídeæ*, from the garden of William Harrison, Esq.; one very fine *Amarýllis Jóhnsoni*, from the gardens of the Hon. Miss Elphinstone; the boxes of cut flowers were extremely rich. The *Alstrœmèria Duránta*, from the garden of C. S. Chauncy, Esq., was well worthy of notice; Mr. Francis, of Hertford, exhibited a very fine collection of pelargoniums and heartseases; there was also an excellent collection from Mr. Paul, of Cheshunt. The following prizes were awarded: — Pines, 1., Mr. Davis, gardener to Lady Clark, Oak Hill, Herts; 2., Mr. James Dawson, gardener to Viscount Melbourne; 3., Mr. Pratt, gardener to W. Harrison, Esq., Cheshunt. A case of pruning knives, presented by Mr. W. Nunn, was (agreeably to an arrangement made at the last meeting) added to the first prize of the day, for the collection of 24 miscellaneous plants. This handsome present comprised a set of four knives in a mahogany case, and was handed over to Mr. Williams. (*Ibid.*, June 27.)

July 27. The miscellaneous collections were good, particularly that from the conservatory of Mr. Warner of Hoddesdon. Amongst the fruits were two very fine pines, one an Enville from the gardens of Earl Cowper, the other a New Providence from the gardens of Lord Melbourne. We do not remember to have seen a finer show of the old pine and new Elton strawberry; this latter is well worth the notice of cultivators, it being of a good flavour, large growth, and succeeds when most other strawberries are over. Mr. Chauncy's collection of roses was very fine, and the cut flowers were as rich as usual. A large collection of fine heartseases, pelargoniums, and some fine specimens of new varieties of fuchsia were exhibited by Mr. Francis, nursery-

man, of this town, and a very fine collection of roses from Mr. Paul, of Cheshunt. (1. 1837.)

Sept. 7. The show of dahlias was the principal attraction of the day; they were unusually fine and numerous, and in our opinion have obtained a decided improvement in their sorts and cultivation since last year. A fine collection of Noisette and perpetual roses were exhibited from C. S. Chauncy, Esq., of Munden. A fine Enville pine from the gardens of Lord Melbourne, Brocket Hall, with two very fine queen pines from William Harrison, Esq., Cheshunt, some fine black Teneriffe and white grapes, from the gardens at Youngsbury, drew great admiration. A fine and extensive collection of dahlias, heartseases, apples, &c. were exhibited by Mr. Francis, of Hertford; also a fine collection of dahlias and roses from Mr. Paul, of Cheshunt. Numerous prizes were awarded. (*Ibid*, *Sept.*)

Huntingdonshire. — *Huntingdon Horticultural Society. — April.* Among the prizes were the following: Table apples, 1st prize, old nonpareil, Mr. J. Newman; 2d prize, golden Harvey, Col. Pemberton; sauce apples, 1st prize, Normington wonder, Mr. J. Newman; 2d prize, lemon pippin, W. S. Stonehewer, Esq.; table pears, beurre rance, R. Eaton, Esq.; broccoli (extra prize), Imperial white, Mr. Hudson. Among the cottagers' prizes was one to Thomas Shelford, for rhubarb, grown in a chimney corner in a box of earth. Above 14*l.* were distributed in prizes to cottagers. (*Huntingdon Gazette*, April 8.)

Kent. — *Sydenham Annual Pink Show. — July* 10. The flowers, notwithstanding the badness of the season, were of first rate quality.

Tunbridge Wells Horticultural Society. — June 2. Notwithstanding the backwardness of the season, the display of flowers and plants was very splendid. Numerous prizes were awarded. (See *Gardener's Gazette*, June 17.)

Grove Ferry Pink Feast. — July 18. The company was not so numerous as usual.

Maidstone Horticultural Society. — July 26. This was an excellent exhibition.

The Ramsgate Annual Carnation Show was held August 11.

Ramsgate Pink Feast. — July. The flowers were not quite so good as usual, owing to the unfavourable weather.

Lancashire. — *Lancaster Floral and Horticultural Society. — June.* Considering the weather, the exhibition was a good one, and the attendance, as usual, highly respectable. A flower stand, the invention of Mr. Saul, was shown on this occasion and was much admired. The stand is cast iron, and represents a male figure attired in the exact costume of the Swiss guards, as worn in the 16th century, all painted in proper colours, and bearing in each hand a basin for the reception of flower pots or bouquets. Among the prizes were the following tulips: The best pan, William IV. Captain Wilkinson; feathered bizarres, surpasse catafalque, Mr. Connelly; feathered bybloemens, Maître partout, Mr. Marshall, Bentham; feathered roses, Duc de Bronte, Mr. Connelly; flamed bizarres, Albion, Mr. Hargreaves, High-street; flamed byblœmens, Princess Wirtemburg, Mr. Richardson; flamed roses, Lord Hill, Mr. Richardson. (*Lancaster Gazette*, June 10.)

Blackburn Floral and Horticultural Society. — The show was not above an average one, except as regards the cottagers, in whose productions there was a great improvement.

Bolton Floral and Horticultural Society. — Aug. 8. This show was for carnations and dahlias; and numerous prizes were awarded.

Manchester Floral and Horticultural Society. — July 3. The most remarkable objects were some rhubarb, six stalks of which weighed 15½ lb., shown by J. C. F. Walker, Esq., and an orchideous plant, Stanhòpe*a* oculàta, exhibited by the Rev. J. Clowes.

Leicestershire Floral and Horticultural Society. — Aug. This show was principally for pinks; but some rhubarb was shown, twelve stalks of which weighed 24 lbs.

Hinckley Floral and Horticultural Society. — *July* 11. There was an excellent show of the various productions of the season. The flowers were numerous, and in good perfection; whilst the fruits and vegetables exceeded in quality and abundance any former display of the kind. The following were among the prizes awarded: — Pinks: first pan, Messrs. Taylor and Pearson, with Barratt's conqueror, Lord John Russell, Norman's Benjamin, Duke of St. Albans, Ibett's triumphant, Westlake's hero. Ranunculuses: first, temeraire, Mr. J. M'Ewan. Roses: an extra prize to E. K. Jarvis, Esq., for a tastefully formed pyramid of those beautiful flowers. Pansies: pan of 12 different sorts, Mr. G. May. The singularly wild and beautiful names which this gentleman had attached to his pansies, excited considerable amusement. An extra prize was also given to a pan of 6 seedlings, of this year's sowing, raised by Mrs. Ward, Hinckley Wharf, and remarkable for their size and beauty. Hardy fruits: strawberries (Wilmot's superb), Mr. Cooper, gardener to Lady De Clifford; apples, in an excellent state of preservation, Mr. George May. An extra prize was also awarded to Mr. W. Gutteridge, for a fine specimen of "double double" parsley. Mr. Wilson, gardener to Earl Howe, sent a dish of extremely large and fine-flavoured grapes; a tastefully formed bouquet of calceolarias, of numerous colours and varieties; a bouquet of dahlias, greatly admired for their forwardness and perfection; and a beautiful collection of roses, consisting of nearly 100 varieties, and so arranged as to place in one charming *coup-d'œil* their every gradation of form and hue. A very fine specimen of potatoes was shown, grown by Mr. Wright. (*Leicester Chronicle*, July 15.)

Lincolnshire. — *Grantham Floral and Horticultural Society.* — *August* 3. The room was splendidly decorated with plants from the conservatories of Sir John Harold, Bart., and W. J. Holt, Esq. Mr. Sharman also sent numerous plants and flowers.

Norfolk. — *Norfolk and Norwich Horticultural Society.* — *July* 19. The first was particularly fine.

East Dereham Horticultural Society. — *July* 11. The roses were very beautiful: Mr. D. Hill gained the first prize. Eleven prizes were given to cottagers.

Holt Horticultural Society. — *July* 6. Many of the green-house plants were particularly fine. The collection for which the medal was given contained 56 pots; and among the pots were four varieties of large-flowering cactuses, in full bloom. Many of the pelargoniums were in excellent condition, considering the lateness of the season; and the collection of flowers sent by W. Norris, Esq., was large, and exceedingly beautiful. The roses were few (the outdoor plants generally being only partially in bloom); but there were some very fine specimens of the double yellow. Among the mimuluses was a beautiful specimen of *M.* cardinàlis, sent by W. Norris, Esq.; and, besides, a considerable quantity of calceolarias, in pots. A collection of new varieties of flowers, some of them very beautiful, from Lady A. Coke's. Fuchsias were plentiful, with several new annuals; among them, a beautiful Clárkia élegans ròsea, and three very fine coxcombs. Designs and bouquets were, as usual, plentiful. Mr. Shalders's and Mr. Cozens's were both royal crowns; the latter having the words "Victoria Regina" round it. The third prize was in a pyramidal form, and the fourth subject was Gothic. Several of the others were of considerable size. Melons were numerous for the season, and Keen's seedling strawberries very fine and plentiful: there was only one dish of any other kind. A cucumber stalk, with three brace of fine cucumbers upon it, and a gooseberry shoot, 7 ft. long, and very full of large fruit, both brought by Mr. John Brereton, were well worth notice. The vegetables, though generally fine, do not deserve particular notice here, except the prize cauliflower; which, for colour and shape, was matchless. The cottagers' fruits and vegetables were exceedingly good; many of them equal to those exhibited by the members. (*Gard. Gaz.*, July.)

Yarmouth Horticultural Society. — *July* 15. Among the flowers were collections of roses, exhibited by Messrs. Fenn and Laws of Beccles. Mr. George Thurtell's seedling pansies were beautiful.

NORTHAMPTONSHIRE. — *Kettering Horticultural Society*, June 22., was chiefly for ranunculuses and other flowers.

NORTHUMBERLAND. — *Newcastle Botanical and Horticultural Society.* — *March* 3. Silver medals to Mr. Joseph Clark, gardener to Mrs. Bewicke, Close House, for the best dish of dessert apples, and for the best dish of dessert pears; to Mr. Wm. Laing, gardener to Joseph Lamb, Esq., for the best dish of asparagus; to Mr. Wm. Kelly, gardener to A. Donkin, Esq., Jesmond, for the best double hyacinth; to J. G. Clarke, Esq., Benwell Lodge, for the best Camél*lia* japónica; to Mr. John Moderill, gardener to J. C. Anderson, Esq., Little Benton, for the best amaryllis in flower, and for the best exotic plant in flower (Justí*cia* coccínea); to Mr. James Scott, gardener to E. Charlton, Esq., Sandoe, for the best erica; and to Mr. Anthony Hedley, gardener to J. H. Hinde, Esq., M.P., for the best bouquet of flowers. Bronze medals to Mr. Anthony Hedley, for the three best polyanthus narcissuses, of sorts; to Mr. William Kelley, for the best dish of kidneybeans; to Mr. George Foreman, for the best dish of sea-kale. (*Newcastle Courant*, March 31.)

June 16. For the best-flavoured pine-apple, the gold medal, to Mr. John Moderill, gardener to Mrs. Anderson, Little Benton; the best dish of grapes, of sorts, the gold medal, to Mr. Joseph Clark, gardener to Mrs. Bewicke, Close House; the best half peck of potatoes, certified in writing to be grown in the open ground, the silver medal, to ditto; the best half peck of peas, certified in writing to be grown in the open ground, the silver medal, to Mr. Thomas Wallis, gardener to C. H. Blackett, Esq., Oakwood. Prizes were also given for tulips and other flowers, and vegetables. (*Ibid.*, June 23.)

July 14. The grapes were especially fine, and those from the garden of Nath. Grace, Esq., of Scotswood, attracted general admiration. For the best flavoured pine-apple, the gold medal, to Mr. John Moderill, gardener to Mrs. Anderson, Little Benton; the best dish of grapes, of sorts, the silver medal, to Mr. James Scott, gardener to H. Lamb, Esq., Ryton; the best dish of strawberries, of sorts, the silver medal, to Mr. James Scott, gardener to Edward Charlton, Esq., Sandhoe; the best dish of cherries, of sorts, the silver medal, to Mr. Watson, gardener to Mrs. Kirsopp, Spittal, near Hexham; the best three pots of calceolarias, of sorts, the silver medal, to Mr. John Moderill; the best bouquet of six double pinks, of sorts, the silver medal, to Mr. Robert Slater; the best bouquet of six double ranunculuses, of sorts, the silver medal, to Mr. Thomas Buckham, Kenton; the best variegated balsam, the bronze medal, to Mr. Thomas Wallace, gardener to C. Blackett, Esq., Wylam; the best bouquet of 12 double roses, of sorts, the bronze medal, to Mr. Joseph Clarke, gardener to Mrs. Bewicke, Close House; the best bouquet of Brompton stocks, of sorts, to Mr. Thomas Buckham, Kenton; the best bouquet of mimulus, of sorts, the bronze medal, to Mr. J. Stamp, gardener, Whitburn; the best exotic plant, in flower, the silver medal to Jas. G. Clarke, Esq., Benwell Lodge; the best bouquet of flowers, the silver medal, to Mr. Aaron Gaskin, gardener to Miss Tulip Brunton; the best bouquet of China and hybrid China roses, of sorts, the silver medal, to James G. Clarke, Esq. (*Ibid.*, July 21.)

Aug. 25. The display of fruits and flowers was decidedly superior to any before witnessed. The rooms were crowded by gay and fashionable company. Where all was of first-rate excellence, it is almost invidious to particularise. We may, however, without impropriety, make special mention of the show of dahlias sent to the hall by the trustees of the late Mr. Falla, and intrusted for exhibition to Mr. Finney: these flowers were most superb, and drew forth universal encomiums. Numerous prizes were awarded; especially for the fruit, which was of the finest quality. (*Ibid.*, Sept. 1.)

The Cowpen Florists' Society held their show of ranunculuses July 8. 1st class, Mr. William Marshall, Cowpen, first, with supreme; 2d class, Mr. R. Oliver, Cowpen Colliery, first and second, with Quaker and Brabancon. (*Newcastle Courant*, July 21.)

The Felton Florist Society held their annual show of ranunculuses and pansies on July 17., when the prizes were awarded as follows: — Mr. Dawson, first and second, with Lady Fitzherbert and supreme. Pansies: the Rev. James Allgood, first. Mr. Dawson first, with the Queen stock. (*Ibid.*)

The Felton Florist Society held their annual show of carnations and picotees August 21. Carnations: Mr. Burn, first, with Simpson's superb. Picotees: Mr. Henderson, first, with Lord Wellington; Mr. Dawson, second, with Telford's Miss Fanny Kemble. Mr. Burn, extra, with the seedling picotee, Queen Victoria. (*Ibid.*, Sept. 1.)

The Florists of North Shields and its Vicinity held their annual show of tulips, wallflowers, and pansies, July 10. Tulips: Mr. Moses Dormond, Percy Main, first, with rose tulip, Princess Victoria. Bizarre tulips: Mr. Robert Gardner, first, with grand du monde. Wallflowers: Mr. Noble Young, first, with Orange Boven; second, with Blackwall. Mr. Robert Walker exhibited some of the most beautiful pansies. Mr. Walker of North Shields exhibited some gooseberries, one of which was 1½ in. in diameter. (*Ibid.*, July 21.)

The Florists of Seghill held their annual show of tulips June 17. Whites: Mr. John Lynn, first, with rose triumph. Yellows: Mr. Thomas Campbell, first, with Prince of Orange. Mr. Davidson, the best bouquet of flowers. (*Ibid.*, June 23.)

The Florists of Seghill and Cramlington held their annual show of carnations and picotees August 19. Carnations: Mr. Jonathan Campbell, first, with Paul Pry. Picotees: Mr. Jonathan Campbell first, with Miss Fanny Kemble. (*Ibid.*, Sept. 1.)

NOTTINGHAMSHIRE. — *Nottingham Floral and Horticultural Society.* — *June* 6. Although the weather had been very unfavourable, many of the flowers were of first-rate order, and great praise is due to the growers for bringing up their pans of tulips in such condition. We noticed several plants from the gardens of Colonel Rollestone, F. Wright, Esq., G. Walker, Esq., and Needham and Green, which were very fine; and some of them took prizes. The grapes, from —— Towle, Esq. of Burrowash, were very fine, added greatly to the value of the exhibition. We congratulate the Society on their first show, and hope to see them go on prosperously. The first pan of tulips was won by Mr. Gascoigne, with the following flowers, viz.:—1. Earl Grey; 2. Captain White; 3. Black Bagot; 4. Sable rex; 5. Triomphe royal; 6. Unique. (*Nottingham Review*, June 9.)

Bawtry and Retford Horticultural Society. — *Sept.* 28. The principal objects of attraction were two fine specimens: Cactus senilis, and Mammillaria geminispina, from the garden of Thomas Short, Esq.; as well as two new species of terrestrial Orchideæ, from the same. A fine collection of fuchsias (from Earl Spencer's) and dahlias were much admired; as were the stove and green-house plants, from the gardens of the Earl of Lincoln, R. P. Milnes, Esq., and G. S. and F. T. Foljambe, Esqrs.: but the best exhibition was of fruits: the apples and currants were particularly fine. Three bunches of white currants, grown by Thomas Short, Esq., weighed 1¼ oz., and contained 44 berries. J. B. Simpson, Esq., exhibited some very fine pears, apples, peaches, and cherries. A gourd, from Earl Spencer's, weighed 60 lb. The vegetables were very fine: the turnips, carrots, and onions were well worthy of notice. (*Doncaster Chronicle*, Oct. 7.)

SHROPSHIRE. — *Salop Horticultural Society.*—*Aug.* 5. This show was for carnations and picotees.

SOMERSETSHIRE. — *Bath Horticultural Society.*—*May* 2. Notwithstanding the ungenial spring we have experienced, the show of flowers and fruits was most brilliant. Among the successful competitors for prizes, were A. C.

Boode, Esq., of Lucknam; Mr. Wheeler of Warminster, Mr. Seagry of Hilperton, and Mr. H. Luckstone of Malmesbury. (*Salisbury Herald*, May 6.)

June. The show of fruit was not large, but what there was was good. A peach tree, in a pot, trained on a frame, not more than 2 ft. in diameter, with 24 fruit on it, the property of Mr. Young Sturge, was very much admired. There were exhibited specimens of Kyan's patent and dry rot process, applied to canvass, contrasted with other canvass to which the process had not been applied; and, while the latter was more or less decayed, the former was still sound and good, although some of it had been buried in the ground for six months or more.

Staffordshire. — *North Staffordshire Horticultural Society.* — *July* 12. The flowers, fruits, and vegetables were good; and numerous prizes were awarded; but the principal object of attraction was a Highland piper, who had been at the battle of Waterloo. (See *Gardener's Gazette*, July 29.)

Barton under Needwood Botanical, Horticultural, and Floricultural Society. — *Aug.* 16. This show was carnations, picotees, and dahlias.

Burton upon Trent Floral and Horticultural Society. — *Aug.* 8. The lateness of the season operated against the display of stove and green-house plants; but the fruits and vegetables have seldom been surpassed. Numerous prizes were awarded. (*Ibid.*, Sept. 9.)

Stafford Floricultural and Horticultural Society. — *June.* The room was tastefully decorated, and even the confectioner's stand was seen peeping through a bower of evergreens. The tulips were very fine.

Tamworth Horticultural Society. — *July* 26. The carnations were good, but not so numerous as usual.

Trentham Florists' Society. — *Aug.* 19. For carnations and picotees.

Uttoxeter Horticultural and Floricultural Society. — *Aug.* 11. This exhibition was remarkable for the beauty and variety of the carnations, picotees, and other flowers exhibited.

Wolverhampton Floricultural and Horticultural Society. — *June.* This show was principally for tulips; but there were also many fine green-house plants, fruit, and vegetables. Many prizes were awarded. (*Ibid.*, June 24.)

Suffolk. — *Beccles Horticultural Society. July* 7. The cottagers' table was by far better than that of the subscribers, as far as regarded fruit and vegetables. There were, however, some fine green-house plants, sent by the nobility and gentry; and the company was numerous.

Saxmundham Horticultural Society. — *July.* The president's annual donation of two guineas was again distributed among the cottagers for honey obtained on the depriving system.

Stowmarket Horticultural Society. — *July* 18. The roses and pelargoniums were very fine; but the plant which excited the most admiration was a very fine specimen of *Mímulus Hódsoni*, a seedling raised by Mr. Turner of the Botanic Garden, Bury. (See p. 333.)

Bury Horticultural Society. — *June* 9. There were two plants of the *Sempervìvum úrbicum* one of which, from the Botanic Garden, was very finely flowered. *Mímulus Hódsoni*, from the same garden, excited much interest, it was raised by fecundating *Mímulus ròseus* with the pollen of the *Mímulus cardinàlis*. The plant assumed the general character of the latter, with fine rose-coloured flowers, larger and better shaped than the former, and having the orange centre and prominent anthers of *cardinàlis*. But the most curious fact attached to it, and one which seems to present a new feature in the physiology of plants, is, that although a large number of seedlings were raised from this operation of hybridising, they are all as true in their habits, — as identically the same variety — as if cultivated from a distinct species, or propagated from the same root. Mrs. Powell's collection of heartsease was excellent. Mrs. Miller showed two beautifully grown plants of *Thunbérgia alàta* (white and buff), and several other choice flowers Mr. Kneeshaw had a fine collection of pelargoniums, imported from Belgium, and a great variety of calceolarias. Mr. Lord, Mr. Girling, and Mr. Felgate shone in pinks and roses.

Mr. Bevan contributed some valuable exotics. The show of fruits and vegetables was very small. Mr. Trevethan had a dish of very fine pines, grown within two years from the setting; but there was only one dish of grapes, and two strawberries. (*Bury Post*, July 12.)

Sussex. — *Brighton and Sussex Horticultural Society.—Sept.* 1. The collection of dahlias was beautiful; and the grapes, Orleans plums, and cherries attracted great attention.

Chichester Horticultural Society. — Aug. 1. The best fruit was shown by Mr. Harrison, gardener to the Earl of Egremont.

Hurstperpoint Horticultural Society. — Aug. 18. The amateurs displayed an excellent assortment of flowers, fruit, and vegetables; and the productions of the cottagers, in fruit and vegetables, were highly gratifying.

Warwickshire. — *Birmingham Tulip Show. June* 15.—Above 1500 flowers were shown; also many green-house plants, one of which was a superb dryandra, nearly 6 ft. high, sent by Mr. Mellor of Aston. The prizes were numerous. (*Gardener's Gazette*, June 24.)

Coventry and Warwickshire Horticultural and Floricultural Society. — Aug. 8. This was a very splendid exhibition.

Rugby Horticultural Society. — June 29. The vegetables were the best articles exhibited.

Westmoreland Gooseberry Show. — Aug. 5. The largest yellow gooseberry was Rookwood, 19 dwt. 12 grs. ; red, roaring lion, 18 dwt. 22 gr.; green, peacock, 15 dwt. 22 gr.; white, eagle, 14 dwt. 15 gr. The prizes were all given in useful articles, such as copper kettles, knives and forks, &c.

Wiltshire. — *The First Meeting of the Wilts and General Horticultural Society. — April* 4. The forced shrubs presented a gay and interesting appearance; and amongst them two specimens of that beautiful, new, hardy plant, the Clianthus puniceus, three feet in height, and laden with flowers, were particularly conspicuous; but the most attractive object was a superb collection of seedling Amaryllidæ, comprising 12 varieties, exhibited by Mr. Dodd, gardener to Col. Baker. A remarkably healthy and well-blown specimen of the Camellia reticulata, sent by Thomas King, Esq., was the subject of much admiration; as was also a plant of Erica Linnæana superba, from the extensive collection of C. B. Wall, Esq., M. P. Amongst the plants not for competition, was a splendid new seedling variety of azalea (A. phœnicea grandiflora), exhibited by Mr. Squibb, who also sent a numerous and well selected collection of plants, among which were specimens of the new camellia (C. j. Donklaerii), of Rhododendron Cunninghami; and of Epacris campanulata rubra. (*Salisbury Herald*, April, 8. 1837.)

May 23. The collection of plants was most abundant, and many of the specimens were of surpassing excellence. We were particularly attracted by a specimen of Tropæolum tricolorum, exhibited by Mr. Christie, gardener to the Earl of Radnor, which had flowered so abundantly that the flowers almost concealed the trellising on which the plant was trained. We also noticed a new and curious stove plant (*Pothos* sp.), exhibited by the president, A. B. Lambert, Esq., and lately introduced by him from Peru. A new yellow-flowering sweetbriar of singular beauty was exhibited by Thomas King, Esq.; and Mr. Brown, gardener to the Hon. Sidney Herbert, M.P., sent a fine specimen of the new hardy herbaceous plant Pentstemon Cobœa. The show of fruits was particularly good; for, in addition to a gigantic Providence pine-apple from the pinery of Colonel Baker, we noticed a profusion of grapes and strawberries from the gardens of the Earl of Normanton; J. H. Penruddocke, Esq., M.P.; and J. Pulteney, Esq.; and from the forcing-houses of Mr. King there were cherries and red currants. The vegetables, also, were neither deficient in quality nor abundance. Amongst the plants not for competition, the pelargoniums exhibited by Mr. Squibb of the Fisherton Nursery were preeminently attractive; and a new variety of Cactus, (Epiphyllum splendidum) the flower of which surpasses, in size and splendour, that of *C.* Ackermanni major. (*Ibid.*, May 27.)

July 18. On this occasion the collection of plants was so abundant that it was found necessary to exhibit the vegetables and cottagers' productions in another room. The stove plants alone were of such rare merit, that such a choice collection of specimens had not been exhibited at the Horticultural Society's Gardens at Chiswick during the present year. Among the more remarkable specimens were a beautiful and varied collection of calceolarias, exhibited by Mr. Evans, gardener to Mrs. Batt; some elegant ericas, exhibited by Mr. Hughes, gardener to C. B. Wall, Esq.; and a splendid collection of plants, principally stove, exhibited by Mr. Dodd, gardener to Colonel Baker. In addition to the above, were many choice and valuable contributions from the gardens of the Earl of Radnor, the Hon. Sidney Herbert, Dr. Finch, and Thomas King, Esq. The fruits were abundant and excellent, and the display of pine-apples, 10 in number, from the unrivalled pinery of Colonel Baker, elicited unusual admiration. The plants not for competition were principally supplied by Mr. Squibb of the Fisherton Nursery; but there was also a beautiful collection of roses, exhibited by Mr. Wheeler of Warminster; and many of these were new and excellent varieties. (*Salisbury Herald*, July 22.)

September 5. The collection of plants was not so extensive as at some of the previous exhibitions of the present year; but, nevertheless, the show-room was well filled with an abundance of excellent specimens. There was a collection of curious *Cácti*, lately received from Mexico by A. B. Lambert, Esq., the president of the Society; and these were rendered the more interesting by the addition of a new species of Epiphýllum (E. látifrons), the flowers of which are white, and highly scented. A fine specimen of Clerodéndrum speciosíssimum was exhibited from the stove of Colonel Baker, M.P.; by whom, also, was exhibited a plant of Gongòra atropurpùrea in fine bloom. We were much pleased with a specimen of Pentstèmon Murryànus from the gardens of Mrs. Batt; which, from being of a hardy habit, and producing long terminal racemes of brilliant red flowers, is a most valuable addition to herbaceous plants. A collection of fuchias of several varieties was exhibited by H. Coates, Esq., and there were abundant contributions of excellent plants from the extensive collections of the Hon. Sidney Herbert, M.P., C. B. Wall, Esq., M.P.; Dr. Finch, and T. King, Esq. There was a profusion of dahlias, which added not a little to the gay appearance of the show-room. The display of fruits was most abundant, and the specimens exhibited were of a first-rate quality; and amongst these we especially noticed an immense Providence pine, 10lb. in weight, from the pinery of the Earl of Normanton. The plants not for competition were supplied by Mr. Squibb of the Fisherton Nursery; and, in addition to fine specimens of green-house plants, including *Clématis Sieböldti*, he exhibited an extensive assortment of fine dahlias. There were also excellent stands of dahlias from the nurseries of Mr. Turnbull of Milford, and Mr. Wheeler of Warminster. At this exhibition, the silver Banksian medal, received from the Parent Horticultural Society, was awarded to Mr. Dodds, gardener to Colonel Baker, M.P., he being the competitor to whom the greatest number of first prizes has been awarded during the present year. (*Ibid.*, September 9. 1837.)

The Third Annual Horticultural, Floral, and Grand Dahlia Exhibition was held at Chippenham, September 8. The elegant manner in which the room was decorated reflected the highest credit on those gentlemen who undertook the arrangements, and very justly excited the admiration of the beauty, rank, and numbers that attended to witness this superlatively splendid exhibition. To the right, on entering the room, the attention was attracted by a parcel of evergreens, bordered by rows of dahlias, embracing almost every hue, 17 ft. by 6 ft., which formed the ground for the name of our illustrious Queen Victoria, composed of the most beautiful white blooms, to the number of 400, in letters of 3 ft. Above this there was a triangle of evergreens and dahlias alternately, with a very superb crown in the centre. On the right was an elegant Grecian arch, composed of blooms embracing nearly every variety of colour, in the centre of which was the representation of a star and other devices; the base corresponding with the one on the opposite side, and the ground being composed of

evergreens, on which was placed the name of the fair goddess of flowers. On tables placed in the centre of the room was a crown formed of dahlias of large dimensions, with a beautiful vase on one side and a fountain on the other; each having a smaller crown by its side, formed of the choicest description of flowers, and many other devices of an equally elegant character, in the arrangement of which taste of a superior order was evinced. The exotics, &c., furnished by Joseph Neeld, Esq., M.P., and other gentlemen, were of the first quality, as were likewise the fruits and vegetables. (*Salisbury Herald*, Sept. 9.)

The First Show of the Calne Floricultural Society, for Dahlias. — August 31. The hall was tastefully decorated with laurels, dahlias, and green-house plants, furnished for the occasion from the garden at Bowood, and from Messrs. Heale of Calne. It is anticipated that another year the funds of the society will enable them to give prizes for fruits, &c., and for the best-cultivated cottage gardens. (*Ibid.*)

The Annual Winchester Cucumber Show. — April 17. The prizes were awarded as follows: — 1st, to Mr. Dodd, gardener to Edward Baker, Esq.; 2d, to Mr. Trollope, gardener to Mr. Jones, of the White Hart Hotel; 3d, to Mr. Smith, gardener to J. H. Jacob, Esq. (*Ibid.*, April 18.)

The Wilton Annual Pink Feast. — July. The show of flowers was remarkably fine, and the prizes were awarded as follows: — The 1st, to Mr. John Keynes of Salisbury; the 2d, to Mr. Turner of Wilton; and the 3d, to Mr. Squibb of Fisherton. (*Ibid.*, July 22.)

Worcestershire. — *Worcester Horticultural Society. — July* 28. The carnations and picotees, and the dahlias excited great admiration, as did also a Fúchs*ia* globòsa sent by Mr. Smith.

Vale of Evesham Horticultural and Floricultural Society. — July 27. A bouquet, with the word "Victoria," exhibited by Mr. Clarke of Croome, excited great admiration.

Hagley and Stourbridge Floricultural and Horticultural Society. — Aug. Carnations and picotees were the principal objects; but there were also some excellent fruit and vegetables.

Yorkshire. — *Beverly and East Riding Floral and Horticultural Society. — June* 7. The principal room contained three tables placed longitudinally. The end of the centre table nearest to the marquee was covered with fruit; namely, apples, melons, grapes, filberts, gooseberries and strawberries, &c.; while the other end displayed samples of the best cucumbers, kidneybeans, asparagus, potatoes, &c. The potatoes were remarkably forward for the season. The table on the west side of the room contained specimens of the finest salads we ever saw; the opposite side of the room was graced by some fine cauliflowers, and other early productions of the kitchen-garden. One division, which did credit to the growers, was conspicuously marked out as the "cottagers'" offering. A semicircular stand at the end of the centre table nearest the door supported two arches of flowers, from which were suspended W. R., in bold letters of crimson daisies. The marquee was devoted to the exhibition of plants and flowers, which were shown in great abundance, upon shelves extending nearly the whole length of the lawn. The plants consisted of splendid fuchsias, calceolarias, ericas, and some most beautiful geraniums, chiefly from the collection of the Rev. E. Thoroton, the president; an excellent specimen of Chánthus puníceus, in full flower, from the Botanic Garden, at Hull; as also a plant of Dryándr*a* nervòsa. A collection of 150 plants, from the nursery of Messrs. George Press and Son of Beverly was exhibited, but not for competition. Amongst these were, an orchideous plant called Brás*sia* maculàta, in full bloom, which is very rarely seen in flower; also, several fine specimens of Chinese azaleas. The centre and both sides of the awning were hung with garlands of flowers, and several strings of the same descended gracefully from the top to the bottom of both sides. A large semicircular table was placed at the north end of the marquee, over which the word "Floriculture" was formed in bold characters, each letter being composed of a separate flower. There must have been near a 1000 of a sort

in some of the letters. Over the president's chair were the crown of England and the Prince of Wales's feathers, both formed of appropriate flowers, which looked extremely well. Upon the green was a specimen of the patent grass-cutter, from Mr. Crosskill's rooms. (*Hull Advertiser*, June 9. 1837.)

Sept. 13. The centre stage was reduced in width, and appropriated to the productions of the green-house and stove, garnished with cut flowers; whilst at the sides stages ran the whole length, one of which was devoted to dahlias, and the other to China asters, marigolds, &c. On entering the marquee, the first object we observed was the imperial crown on the cushion, formed of exotic and hardy cut flowers, and being the first prize bouquet. Over this was the word "Flora," tastefully formed of dahlias, each letter of a separate colour, and having, in its composition, ruby, white, moroon, primrose, and pink; this, from its variety, had a very splendid appearance. At the extreme end of the marquee was an iron seat, appropriated to the president, manufactured by Mr. Crosskill. Above the president's place were the royal arms. The lion and the unicorn, which formed the supporters, were very large, and were composed of China asters and dahlias; the crown which surmounted the whole, was formed of dahlias, pansies, and an excellent selection of exotics. Along the centre was a stage, on which was a good display of fuchsias, ericas, calceolarias, cockscombs, balsams, tripods, and baskets of cut flowers, &c. The greatest attraction during the day, however, was the most splendid collection of dahlias it has been our fortune to witness. The stage containing it, which extended the whole length of the marquee, was divided into compartments, each compartment filled with a class of dahlias; and some idea may be formed of the effect produced, when we mention that there were in the collection about 2,500 dahlias in glasses, exclusive of pans and bouquets. The white and spotted varieties were most admired. Among the fruits we noticed a lemon and an orange tree, both very fine specimens, and having fruit upon them. A prize by the Metropolitan Society for three fruits was awarded to a magnificent pine, some black grapes, and a melon. A very large branch of white grapes of several bunches, the weight being 6 lb. 2 oz., was much admired. The vegetables, particularly those grown by the cottagers, were very fine. The number of plates for fruit, &c., was about 600. (*York Herald*, Sept. 30.)

North Riding Horticultural and Floricultural Society. — *July* 28. The display was not so great as we have been accustomed to see at this season, owing to the late unfavourable state of the weather; yet the specimens were of a very superior description. (*Ibid.*, Aug. 4.)

Sept. 15. The meeting was most numerous and respectable, and the exhibition of fruits, flowers, and vegetables, considering the adverse season, most satisfactory. The show of dahlias was very brilliant, upwards of 1000 being exhibited for competition; and very great credit was due to the judges for the patience and nice discrimination exercised by them on the occasion. (*Ibid.* Sept. 30.)

West Riding Horticultural Show. — *Aug.* Among the prizes were, one for the best collection of heaths, stove exotics, green-house plants, and hardy plants, Mr. W. Barratt, of Wakefield; and another for *Rosa dianthiflora* (a new variety), also shown by W. Barratt. (*West Riding Herald*, Aug. 4.)

Conisburg Horticultural Society. — *Aug.* 8. Numerous prizes were awarded for fruits, vegetables, and flowers.

Doncaster Horticultural Society. — *April* 26. The display of stove and green-house plants was extremely large and splendid; but the most attractive object in the room was the large white azalea of Messrs. Crowder. It was a truly splendid plant, containing upwards of 1300 flowers, and was universally admired. The Cactus tribe was very numerous; a beautiful specimen from Woodlands taking away the first prize. The azaleas and pelargoniums generally were very fine; though the latter were somewhat deficient in the size of the flower, owing to the severity of the season. The display of auriculas, hyacinths, and primroses was, for the lateness of the season, very good.

The competitors for the cottagers' prizes were not numerous; but we hope these will increase as the season advances. (*Doncaster Gazette*, April 28.)

Aug. 2. The show of green-house and stove plants, as well as of fuchsias and pelargoniums, was very good. The display of fruits was extremely fine, particularly of pines and grapes; and the various dishes were universally admired. A dish of pines from Mr. Stone of Sprotborough attracted great attention. The show of vegetables was very good. Mr. Crowcroft of this town exhibited a fine seedling dark moroon dahlia, which obtained the prize, and which was named "Danum" by the committee. The cottagers' table also exhibited several specimens both of fruits and vegetables. Mr. James Atkinson of Sheffield, florist, exhibited several splendid picotees. (*Doncaster Gazette*, Aug. 4.; and *Sheffield Iris*, Aug. 8.)

Hull Floral and Horticultural Society. — Sept. 14. and 15. The room was elegantly decorated with evergreens, interspersed with dahlias, and some good bouquets were shown. Amongst other attractions, was a good specimen of Fúchs*ia* cónica; a remarkably tall plant, for one year's growth, belonging to Mr. Jones. This gentleman also exhibited a Camél*lia* japónica in flower, and having about 20 buds; the second time of its flowering this season. Amongst the fruits were some very good baking apples; though the table did not come up to previous exhibitions. Mr. Oglesby had some very fine figs grown in the open air. The vegetables were also good, particularly the celery. The exhibition closed with a dance, which commenced at five o'clock. Quadrilles, waltzes, and country dances went gaily on, to the delight of a large company, until ten o'clock, when the party separated, gratified with the treat they had enjoyed, and giving their best thanks to the Society for the spirit displayed. (*Hull Observer*, Sept. 19. 1837.)

Hunslets Florists' Society. — Aug. 21. This show was for carnations and picotees; and the first prize in each division was gained by Benjamin Ely and Son, with seedlings.

Leeds Horticultural and Floral Society. — June 7. The saloon was most tastefully decorated, under the superintendence of Mr. Mallinson, with flowers and evergreens. Over the front of the orchestra were the words "Leeds Horticultural and Floral Society," formed of various-coloured tulips, tastefully stuck through a board, extending from side to side of the orchestra. Over this were several arches of evergreens, and over the centre an ornamental floral device. The front of the orchestra was covered with evergreens and splendid bouquets of flowers; and over the entrance door were the letters W. R., surmounted by the representation of a crown (not of the most elegant construction), all formed of flowers. There were four tables arranged lengthwise, which were filled with some of the choicest specimens of horticultural and floral produce; indeed, all so much so, that it would be invidious to particularise any of them. The prizes were only honorary; and the proceeds of the exhibition, the non-subscribers paying 2*s.* 6*d.* each, was given to the Leeds General Infirmary. (*Leeds Mercury.*)

Aug. 9. The rooms were most elegantly decorated with evergreens, interspersed with flowers in a most tasteful manner. The show of pines, grapes, peaches, cherries, strawberries, gooseberies, and currants were of a very superior size and quality. The vegetables particularly were very fine productions, and of the most distinguished varieties. The rooms were ornamented with designs and bouquets. The show of dahlias was extensive and were universally admired. There was a good display of grove and green-house plants, which gave to the whole a lively and imposing effect. The proceeds of the meeting, which were considerable, were given to the Infirmary. (*Ibid.*, Aug. 19.)

Sept. 13. The Leeds Horticultural and Floral Society held its third and last exhibition for the present season, for the benefit of the unemployed poor. Among the prizes for fruit was one for Money's Escholàta supérba grape, R. Hopps. Peaches, 1. Royal George, Joseph Thrower; 2. Noblesse, Mr. George Bradley. Nectarines, 1. (Extra) Elruge, Mr. Joseph Thrower. Apricots, 1. (Extra) Moor Park, Mr. Thomas Umpleby. Melons, 1. Windsor

prize, Joseph Horner, gardener to John Gott, Esq. Figs, 1. Black, Mr. R. Hopps. Plums, 1. (Dark) Goliath, Mr. Jonathan Clapham, gardener to F. Morris, Esq.; 2. (Dark) Nectarine, Mr. W. L. Wise; 3. (Dark) Cobbler's Ball, Mr. G. Bradley; 1. (White) Magnum bonum, Mr. T. Umpleby. Among the gooseberries were some yellows, plucked from a tree 60 years old, by Mr. Joseph Marshall, market-gardener, Belleisle. We also noticed a dish of apples, containing 24 varieties, and a dish of seedling apples, fine specimens, from the garden of James Leather, Esq.; also a fine specimen of seedling apples, presented by Mr. Woodhead, of Heath, which he named the Glory. The dahlias were very fine, and very numerous. A splendid collection of carnations and picotees was exhibited as decorations by Mr. B. Ely. Among the cottagers' prizes were, to George Parker, *Fúchsia* virgàta; William Been, 1. carnations (21 seedlings); 1. picotees, two blooms. (*Leeds Merc.*, Oct. 28.)

Pontefract Horticultural Society. — Aug. 9 The best clove carnation was shown by Mr. Jones of Ackworth. Among the prizes was one awarded to a cottager, Charles Halfpenny of Pontefract, for the best potatoes.

Sheffield Botanic Gardens. — July 3. and 4. This was the first exhibition of plants, flowers, fruits, and vegetables for the season. The tent for the display of fruits and vegetables was fixed in the lower part of the gardens, conveniently arranged, with a table, 8 ft. in width, down the centre, and having a space on each side for the accommodation of visiters. In this tent, numerous articles were exhibited, of very great beauty and excellence of their kind, especially the pine-apples from Chatsworth, and the grapes from Wentworth Castle; also, some water-melons from Chatsworth, of the most exquisite flavour. Amongst the vegetables, Mr. Batley's rhubarb formed a prominent feature, its unusual size appearing to attract general attention. The potatoes, peas, cauliflowers, &c., were mostly superior specimens. The display of plants was still more beautiful than that of fruit and vegetables; and the large tent was well filled. Mr. Paxton's clerodendrum, with rich scarlet flowers, although a good deal injured by its long carriage from Chatsworth, was, nevertheless, much admired; and Mr. Braide's *Helichrysum* venústum and *Erica* odoràta were pronounced, by competent judges, to be the finest in the kingdom. Among the display of cut flowers was the crown, with the word "Victoria" round the bottom, Mr. Paxton; and a splendid pyramid, Mr. Appleby. Plants: Mr. Appleby, being the competitor who had obtained the greatest amount in money prizes in the different classes of plants, received, in addition to his prize money, an elegant fowling-piece, presented by Joseph Shore, Esq. of Birmingham, value 15*l.*; Mr. Paxton, having obtained the second greatest amount, received, in addition to his prize money, a silver cup, value 5*l.* Fruits: The greatest amount in money prizes having been obtained by Mr. Paxton, he received, in addition to the money prizes, a silver cup, value 10*l.*; the second greatest amount having been obtained by Mr. Batley, of Wentworth Castle, he received, in addition, a silver cup, value 5*l.* Vegetables: A silver cup, value 10*l.*, was received by Mr. Abraham, South Street, who had obtained the greatest amount in money prizes; Mr. Waterhouse, having obtained the second greatest amount, received a prize, value 2*l.* 10*s.* Cottagers' class: Mr. Marsden, Little Sheffield, received one sovereign in addition, having obtained the greatest amount in money prizes for vegetables; Mr. Machon, Little Sheffield, received 10*s.* for having obtained the second greatest amount; Mr. Fielding, Sheffield, received 5*s.* for having obtained the third greatest amount. (*Sheffield Independent*, July 8.)

Whitby Floral and Horicultural Society. — Sept. 12. Many of the dahlia prizes were won with seedlings, principally raised by the Messrs. Willison.

York Horticultural Society. — Sept. 28. On entering the room, the most splendid attraction that arrested attention was a large triumphal arch, spread over the orchestra; the loyal inscription, "Long live the Queen," surmounted by a crown, being formed of dahlias, on a green surface; the colour, tip, and shade being of endless variety. The light pillars which supported it were beautifully entwined with laurel and evergreens. There were above 1000

dahlias in this novel and striking production, which was made by James Richardson, Esq. of Bootham, Mr. Dempsey, Mr. Baines, and other members of the committee; the specimens being sent from several gardens in the city and neighbourhood. The span of the arch was 18 ft., and the height of the whole, from the floor, about 22 ft. Near this arch were placed two bouquets, of unusual height, and very beautiful, at this advanced period of the year. Two species of Mùs*a* were much admired: they were from the stove of John Smith, Esq. of Grimston, who deserves the thanks of the public for the many specimens which he regularly sends to garnish the room. Amongst the plants sent from the same gentleman was a fine palm, *Sàbal* Blackburni*àna*. It was now about nine years old, and was raised from seed which had been in his collection of dried fruits for a considerable time. (See p. 445., and Vol. V. p. 52. and fig. 10., for an account of one of these palms.) The dahlias were so numerous, that an additional stand was provided for them; and, besides those exhibited for competition, were several varieties from Mr. Edwards, florist, of this city, sent for the gratification of the company. Fruits, as might be expected, were plentiful, and of the richest quality; and the vegetables shown were large and finely grown.

The Evening Exhibition. At half-past six o'clock, the doors of the Concert Room were again opened for the admission of company. The fruits and vegetables had been removed in the interval, and the rich and splendid collection of dahlias, asters, and other flowers, had undergone some little change of arrangement, and now presented, under a brilliant illumination of gas, their beautiful forms and varied hues to the gratification of the spectators. The superb display of rare plants and exotics still occupied their prominent station in the centre of the room, which was ornamented, in addition to the majestic triumphal arch, which we have already described, with two elegant wreaths of flowers, encircling the words "Flora" and "Pomona", formed of a rich variety of dahlias. Walker's brass band was stationed in the orchestra, and added much to the enlivenment of the scene by its truly admirable performance of a great number of overtures and popular pieces of music. (*York Herald*, Sept. 30.)

CHANNEL ISLANDS.

Guernsey Horticultural Society. — April 23. The number of new flowers, particularly calceolarias and geraniums, reared since the last exhibition, was very great, and their merits were duly appreciated by the visiters. Upon a fair calculation, we presume that between 800 and 900 persons attended the exhibition. The cottagers brought forward a largecollection of their productions; and Mr. Wm. Hooper, nurseryman, was particularly successful in gaining prizes. His show of green-house plants was very good, and his ericas excellent; his shrubby calceolarias were likewise worthy of specific notice. The challengeable medal was also awarded to Mr. Hooper, for the 12 best pelargoniums. We also particularly noticed a superb collection of nearly one hundred choice green-house plants, in high perfection, sent in by P. B. Dobree, Esq., of the Beauregard, for exhibition only. John Hubert, Esq., contributed some remarkably fine schizanthuses, by far the best in the exhibition. Mr. John Vidamour was as copious a contributor as usual; and we were glad to see his exertions in the cause rewarded with one of the premium prize cards. We understand that Charles De Jersey, Esq., was entitled to receive a silver medal, on account of some of his choice flowers; but that he declined accepting it, as his sole object is to promote the good of the Society. Each cottager who obtained a first prize received gratis (besides the premium) a dahlia plant, in a pot, of some admired double variety. (*The Comet*, April 24. and May 25.)

July 26. Mr. William Mellish obtained the challengeable medal, for the 12 best yellow picotees; and a small medal for the best carnation picotees, besides other prizes. A premium prize was awarded to Mr. John Vidamour, for 140 miscellaneous plants. P. B. Dobree, Esq., had a beautiful collection

of green-house plants; also, Mr. William Hooper of the Sarnian Nursery, among whose collection were two fine specimens of the Rhodánthe Manglèsii, which were much admired. Mr. W. Brock's (Belmont) seedling pelargonium and calceolarias could not be surpassed: Mr. Hoyle also exhibited a beautiful collection of these flowers. Mr. W. Crick has also grown some excellent seedling strawberries, deserving of special notice. Among the vegetables sent in by the members of the Institution, we noticed three excellent cauliflowers, by Sir Thomas Saumarez, and also three heads of white celery. Mr. Samuel Harris, of the Royal Yacht Club Hotel, as usual, had some good articles from his garden, among which we noticed a plate of "matchless peas," beans, vegetable marrow, kidneybeans, and a fine bunch of parsneps, &c. The fruit consisted of hot-house grapes, cherries, raspberries, strawberries, currants, gooseberries, apples, &c., the most part of which were excellent. The cottagers' productions were not abundant; but good, so far as they went. The new potatoes were very fine. There were some excellent samples of cucumbers, kidneybeans, and scarlet runners; and some good specimens of fruit, of different kinds. (*The Star*, July 27.)

Jersey Horticultural and Agricultural Society. — May 24. The different collections of green-house plants were splendid, some of the pelargoniums equal to any we have ever seen, and evinced as much taste in their selection as judgment in their cultivation. Pine apples, grapes, melons, oranges, and lemons were amongst the more rare fruits on the table. There were likewise many excellently-preserved apples and pears: some of the former looked as fresh and sound as if just plucked from the trees. We saw, also, a few baskets of cucumbers, pears, beans, and potatoes, and two bundles of asparagus and rhubarb, exceedingly fine. A new variety of the latter was exhibited, for the first time by Mr. B. Saunders, not less remarkable for its size than its flavour. Some idea may be formed of its growth from the fact that a single stick has been known to weigh 3 lb. Among the prizes for cottagers were some for poultry, cock and hen, 3*s.* 6*d.*, first prize, F. Touzel; ditto, 2*s.*, second prize, Thomas Lock. (*The British Press*, May 26.)

June. Amongst those which we particularly noticed, were some beautiful specimens of the Gladìolus tribe, from Mrs. Pipon's, of Noirmont, and some new Brazilian plants from Mr. Robin's. The collections of roses exhibited by Mr. B. Saunders, and Mr. R. Langelier, showed the high state of perfection to which the cultivation of this most lovely tenant of the garden has arrived in Jersey. (*Ibid.*)

Oct. 18. The exhibitions of the cottagers were more numerous than on any former occasion, and their articles superior. The dahlias exhibited by Messrs. Saunders and René Langelier were varied and brilliant beyond the powers of humble prose to describe, and should be seen to be duly appreciated. Mrs. Owen of Millbrook sent a beautiful bouquet to the exhibition, tastefully arranged in the form of a sofa, and containing more than one hundred varieties of flowers. Mr. R. Langelier's pears were excellent, and the apples of every variety generally very fine. It had been intended to make a selection from the pears, for which Jersey is so famous, as an offering to the Queen, who has graciously condescended to patronise the Society; but we regret to say that, from the unfavourable nature of the season, none were considered sufficiently good; and Jersey has thus lost the opportunity, for the present, of offering one of its finest productions to the lips of Majesty. Amongst the agricultural implements exhibited, we noticed one of a very ingenious description, the invention of a native, for digging potatoes, which, we believe, is likely to come into general use. Among the prizes, those for the best dahlia, and the best seedling dahlia, were won by Mr. René Langelier; and the best seedling apple, by Mr. B. Saunders. For the finest sample of wheat, not less than three cabots, of Kentish downy or velousé, Mr. J. Le Brocq (St. Helier). For plough, for digging potatoes, Mr. J. Le Boutillier; and drill for sowing parsneps, &c., Mr. Marett (D'Avranche). (*Ibid.*, Oct.)

THE ISLE OF MAN.

Isle of Man Floricultural and Horticultural Society.—Sept. 6. This was the first meeting of the Society. It was an excellent exhibition, and numerously attended.

SCOTLAND.

EDINBURGH.—*Caledonian Horticultural Society.—March* 2. For the four finest camellias of recent introduction, in flower, the silver medal was awarded to Mr. John Young, gardener to Thomas Oliver, Esq., Newington Lodge, who exhibited Gray's invincible, cárnea, Press's eclipse, and corállina. A fine seedling camellia, allied to C. *myrtifòlia*, and raised in 1831, from the seed of that species, was brought forward by Mr John Macnaughton, gardener to John Wauchope, Esq., of Edmonstone. For four species of E'pacris in flower (E. grandiflòra, impréssa, nivàlis, and pulchélla), a premium was voted to Mr. John Robertson, gardener to Lord Gray, Kinfauns. A brilliant head of flowers, produced in the open border, notwithstanding the severe winter, upon a seedling hybrid rhododendron, was exhibited from the garden of Mr. Falconer of Carlowrie, and a premium was voted to Mr. Alexander Forrester, who raised it. This hybrid was evidently the offspring of *R.* arbòreum.

The display of the new French and Flemish pears from our Scottish gardens was highly satisfactory, proving what obstacles may be overcome by the zeal and skill of the gardener. After a very careful comparison, the silver medal was awarded to Mr. William Newton, gardener to Sir David Baird, Newbyth, whose kinds were, the Spanish bon Chrétien, glout morceau, and crassanne; and a second prize was voted to Mr. John Young, gardener to Sir James Gibson Craig, Bart. Riccarton, who produced the St. Germain, ne plus meuris, and crassanne. For the best twelve stalks of forced rhubarb, the stalks produced were all large and crisp, showing the perfection to which the winter culture of this vegetable, so desirable for tarts, has now been brought, but the first prize was gained by Mr. John Young, Riccarton, whose specimens were of remarkably large size. For forced sea-kale, the premium was awarded to Mr. David Brewster, gardener to Colonel Lindsay of Balcarris. There was placed on the table a collection of thirty-five sorts of the best dessert and baking apples, with their names attached; the fruit was in high preservation, and obtained the Society's silver medal for Mr. Arthur Calder, gardener to George Sligo, Esq., of Seacliff. A fine specimen of the Brazilian pine-apple, rendered beautiful by its scarlet scales, was much admired; and a premium was awarded to Mr. James Mackintosh, gardener at Archerfield, to Robert Ferguson, Esq. of Raith, who raised it. For well-grown samples of Brussels sprouts, a premium was voted to Mr. James Stuart, gardener to Sir John Hope, Bart., of Pinkie. Mr. Stuart, we believe, is the father of Scottish gardeners, and has been head gardener at Pinkie for the long period of fifty-three years. Among the other productions of the day may be noticed, cucumbers raised in a frame heated by the circulation of hot water, under the direction of Mr. Smith, gardener at Hopetoun; a fine specimen of Sarracè*nia* flàva in full flower, from the nursery garden of Messrs. Dickson and Sons, Inverleith; and beautiful plants of *E*uphórb*ia* splèndens and Blè*tia* Tankervíllæ, covered with flowers, from the garden of the Society. (*Edinburgh Advertiser*, March 7.)

July 12. The decorations of the tents, &c., exhibited on this occasion a new feature, being enriched and surmounted by the singularly beautiful leaves of different varieties of palm, sent, as we understood, from the Royal Botanic Garden, which imparted an eastern appearance to the composition of flowers and foliage. For shrubby exotics in flower, the silver medal, to Mr. Robert Watson, gardener to David Anderson, Esq., of Mordun. The show of pelargoniums was extensive and splendid. The silver medal was voted to Mr. David Brewster, gardener to Colonel Lindsay of Balcarris. The show of peaches was good; and the medal was awarded to Mr. Brewster at Balcarris.

The pinks were peculiarly beautiful, and the medal for them was awarded to Mr. William Cuthbertson, gardener to the Earl of Rosebery, Dalmeny Park. A premium having been offered for the best-grown, exotic, tender plant, whether in flower or not, three competitors appeared. The medal was awarded to Mr. Kelly, propagator at Messrs. Dickson and Sons, Inverleith Nurseries, for a magnificent plant of *Nepénthes distillatòria*, bearing a spike of female flowers, and very large and perfect pitchers. The other plants were *Coffèa* arábica, coming into flower, from Dr. Neill's, and *Hoýa* carnòsa, trained 10ft. high, and clothed with flowers. Some very large and beautiful noblesse peaches, from the early peach-house at Erskine House, were much admired; and a premium of half a guinea was voted to Mr. George Sheills, gardener to Lord Blantyre, as a mark of approbation of his success as a cultivator. (*Scotsman*, July 19. 1837.)

Edinburgh Horticultural Society. — Sept. For the best three sorts of peaches from the open wall; first prize to Mr. John Braid, gardener to George Simson, Esq., of Pitcorthie House, the kinds being royal George, red Magdalen, and noblesse; second prize, to Mr. John Robertson, gardener to Lord Gray, Kinfauns, for noblesse, galande, and French mignonne. For the best two sorts of nectarine from a glazed house, to Mr. James Mackintosh, gardener to Robert Ferguson, Esq., at Archerfield; the kinds being the Newington and Du Teuiers. For the best three sorts of apricot from the open wall, to Mr. James Kidd, gardener to Lord Kinnaird, Rossie Priory. For the best six sorts of plums, to Mr. James Murray, gardener to Andrew Fletcher, Esq., of Saltoun; the kinds being Coe's golden drop, green gage, wine-sour, Ferney Hall plum, Orleans, and white magnum bonum. For the best figs of any variety; first prize to Mr. Peter Wood, gardener to the Earl of Hopetoun, Ormiston Hall; second prize, to Mr. James Smith, gardener to the Earl of Hopetoun, Hopetoun House. For the best three sorts of summer pears, to Mr. Arthur Calder, gardener to George Sligo, Esq., of Seacliff; the kinds being the jargonelle, green yair, and Longueville. For the best four sorts of grapes, the first prize was awarded to Mr. James Falconer, gardener to Sir David Erskine, Cambo House; the kinds being white muscat, black Hamburgh, black Frontignan and white Frontignan; the second prize, to Mr. Robert Arthur, gardener to Lady Jane Hamilton Dalrymple, Wall Tower Garden; the kinds being white Frontignan, white muscat, Chasselas musque, and black Hamburg. A premium was also awarded to Mr. Arthur for producing the largest cluster of grapes. For the best cluster of a recently introduced grape, the medal was voted to Mr. Alexander Smith, gardener to William Forbes, Esq., of Callendar House; the kind being the Cochin-China grape. For the finest queen pine-apple, to Mr. James Smith, at Hopetoun House. For the best-grown pine-apple of any other variety, to Mr. William Cuthbertson, gardener to the Earl of Rosebery, Dalmeny Park. For the best three sorts of melons, the medal was voted to Mr. James Falconer, gardener, Cambo House; the kinds being Arkley's green-fleshed, Egyptian green, and Windsor green. For the greatest variety of different kinds of fruit, the medal was awarded to Mr. James Murray, Saltoun Garden, who produced no fewer than ninety-eight sorts. For the best six varieties of rose de quatre saisons, a premium was voted to Mr. Charles Berry, foreman to Messrs P. Lawson and Son, Golden Acre. For the finest bouquet of autumnal flowers tastefully arranged, a premium was assigned to Mr. William Smith, gardener to Miss Scott, Mount Lodge; and there was a similar award to Messrs. Cleghorn for a Victoria crown, formed of flowers produced in their Prince's Street nurseries.

Small premiums were awarded for various extra productions; in particular, to Mr. George Sheills, gardener at Erskine House, for fine black Hamburg grapes, from a flued wall, without the aid of glass; to Mr. John Brown, gardener to the Alexander Smith, Esq., at Woodlands, near Duddingston, for samples of the fruit of the eatable winter cherry of Phýsalis peruviàna, and of marmalade made from the same; to Mr. William Buchanan, gardener at Cul-

dees Castle, for seedling peaches and nectarines; and to William Patison, Esq., Williamfield, for fine carnations and picotees, and for seedling hollyhocks.

There were two competitions in dahlias, first between private gardeners or amateurs among themselves; and next between dealers or nurserymen among themselves. In the gardeners' competition for the rarest, newest, and finest collection, of thirty sorts, the first prize, or gold medal, was awarded to Mr. Peter Thompson, gardener to James Hope Vere, Esq., Craigiehall. In the nurserymen's competition, it was unanimously found that the finest collection of thirty select sorts was sent by Mr. Handasyde, Fisherrow. In the competition for seedling dahlias, no fewer than fourteen competitors appeared, evincing the great zeal of cultivators in raising this fine flower. Three prizes were awarded, 1. To Mr. Henderson, gardener, at Delvine; 2. To Mr. Handasyde, Fisherrow; and, 3. To Mr. Smith, gardener at Callendar House.

Thursday the various fruits, flowers, and plants sent for competition and exhibition were displayed on tables in the large room, and brought together a highly fashionable attendance. Among the decorations which gave effect to this grand horticultural display, were large and beautiful palm and banana leaves, which were here and there judiciously disposed. The splendid plants were chiefly from the secretary's garden at Canon Mills, the Society's garden, and the Royal Botanic Garden. Among the decorations was a splendid bouquet, and a crown formed with dahlias. This latter was composed of dahlias reared in the Nor' Loch, or what is now called East Prince's Street Gardens, possessed by the Messrs. Cleghorn.

In the evening, a party of nearly 200 ladies and gentlemen assembled. The Lord Advocate presided; Dr. Neill and John Leven, Esq., vice-presidents. This was the first occasion on which it was agreed that ladies should be invited to the festival. The Lord Advocate addressed the meeting; and after mentioning the different articles he thought most worthy of notice, he referred to the exquisite taste with which the room had been decorated with the choicest productions of horticulture, for which he said the company were indebted to the taste and skill of Mr. Leven and Mr. M'Nab, jun. (of the Experimental Gardens), and concluded by proposing "Prosperity to the Horticultural Society." (*Edinburgh Evening Courant*, Sept. 23. 1837.)

Bathgate Horticultural Society. — Sept. 6. Among the more remarkable articles, were, a splendid collection of dahlias, presented to the meeting by Messrs. Handasyde, florists, Fisherrow, consisting of 120 of the newest kinds; some fine specimens of kohl-rabi, and Gotte lettuce, produced from Wallhouse Garden; a vigorous plant of that gigantic vegetable, the cow cabbage (15 ft. in circumference), from the garden of Mr. Pearson, Bathgate Brewery; and some excellent apples from Livingstone, by Mr. Galloway. We also noticed several rather new herbaceous plants, belonging to Mr. A. Forrester, secretary. (*Scotsman*, Sept. 13.)

Ayrshire.—*Kilmarnock Horticultural Society.— July* 28. For the thirteen best pinks, 1. Mr. Hugh Loudon, florist, Symington (Suwarrow, Rob the Ranter, Miss Lindsay, &c.). For the seven best garden roses, 1. Mr. N. B. Tillery, gardener, Fullarton House. For the thirteen best pansies, 1. Mr. Wm. Melville, gardener, Dunlop House. For the nine best hardy annuals (Platystèmon californicus, Nemóphila insígnis, Collínsia bícolor, &c.), 1. Mr. Melville. For the five best dahlias (royal Adelaide, yellow perfection, queen, &c.), 1. Mr. Melville. For the seven best calceolarias (Lady Harriet Dunlop, Majorriàna supérba, Lady of the Lake, Loudònia, &c.), 1. Mr. Melville. For the six best and largest red gooseberries, four competitors, 1. Mr. R. Highet. The competing articles were, in general, very fine, particularly the pansies, calceolarias, dahlias, and green-house plants. The grapes were very fine-grown clusters; and the vegetables in general were excellent. There were also exhibited by Mr. Malcolm, gardener, Williamfield, a splendid specimen of the purple egg plant, a very large cucumber, and white carrots. By Mr. John Richmond, gardener, Mount, two very splendid coxcombs. By Mr. Tillery, Fullarton, two very large early York cabbages, and very large rhubarb and

white turnips. By Mr. Hay, Dankeith, very fine pods of Waterloo marrow peas. By Mr. Melville, gardener, Dunlop House, very fine extra curled parsley. By Mr. Laurie, Lainshaw, a large collection of very fine strawberries. By John Brown, Esq., of Laurel Bank, a large box of very fine pansies. By Messrs. Fowlds and Lymburn, nurserymen, a collection of pansies, roses, and calceolarias and flowers; and fine specimens of black Naples and red grape currants. There was also shown a very large specimen of a curiously auriculated fungus, which had sprung up in one of the floors of the carpet factory of Messrs. Gregory, Thomson and Co., Kilmarnock. (*Kilmarnock Journal*, August 10. 1837.

Aberdeenshire Horticultural Society. — *August* 30. Among the prizes were the following: — Best three bunches of grapes, to John Wood, gardener to Sir R. D. H. Elphinstone of Logie, Bart. Best grafted geans, to Alexander Brown, gardener, Heathcot. Best six seedling dahlias, to David Gairns, gardener, Glenbervie. Best six seedling carnations, to John Wood, gardener, Logie. An extra prize was awarded to Mr. John Roy, jun., seedsman, Aberdeen, for a splendid specimen of Hùmea élegans, in full blossom. Second ditto, to David Gairns, gardener, Glenbervie, for a collection of seedling roses. And a third ditto, to Mr. Thomas Milne, Nurseryman, Sunnyside, for a collection of seedling potatoes. (*Aberdeen Journal*, Sept. 6.)

Banffshire Horticultural Society. — *Sept.* 1. Among the prizes were the following: — To James Smith, gardener to Garden Duff, Esq., of Hatton, for first and second melons, and an extra prize for a rare species of cucumber. To George Machattie, gardener, Duff House Gardens, for best gooseberries, dahlias, and China asters. To George Cruikshank, gardener to A. S. Shand, Esq., of Templand, for best heartsease; and an extra prize for six heads of very superior celery, with a detailed account of its cultivation. To George Robertson, gardener to T. A. Duff, Esq, of Haddo, an extra prize for six nectarines, from a tree planted in January last. To George Simpson, gardener to John R. Thain, Esq., of Drumblair, for best carnations and seedling heartsease. (*Ibid.*)

Clackmannanshire. — *Clackmannanshire Horticultural Society.* — *May* 11. The display of green-house and hot-house plants was considerably greater than usual; cut flowers of equal rarity and beauty were abundant; and the vegetables, although not very numerous, were very fine specimens for the season. There was a great profusion of some of the common vegetables, particularly rhubarb (both blanched and natural), a new and beautiful variety of which was exhibited by Mr. Taylor of Dunmore; and it is said to be considerably earlier than any of the other sorts usually cultivated. There were also very fine radishes exhibited from Kennet Garden, and asparagus from Alva Garden. The apples and pears, particularly the former, were most abundant, of great variety and beauty, as well as in a perfect state of preservation, the most of them, indeed, appearing as if they had just been taken from the tree. An immensely large apple (stock Leadington) was from Kennet Garden. Much fine fruit was exhibited by Mr. Taylor from Dunmore garden, and by Mr. Trutter, from Alva garden; from whence, also, were sent 20 different violas, with many polyanthuses and primroses of superior beauty.

A prize for the best plan of a flower-garden, limited to 2 ft. square, the size of the garden not more than 1 acre of ground, was gained by James M'Gruthar, apprentice to Mr. Trotter, gardener to James Johnstone, Esq.. of Alva, and was very much admired, being not only a *plan*, but an elegant *model*, of a garden, divided into compartments filled with earth, ornamented with sprigs and leaves, and with a neat model of a summer-house in one of the corners. (*Stirling Advertiser*, May 26.)

July 29. There were sent for exhibition by Dr. Walker, 100 fine herbaceous plants in flower, with names; by Mr John Gow, from Tullivallan Castle, 72 varieties of hardy-flowering shrubs, besides 6 varieties of fine seedling pinks, and a most luxuriant specimen of the new alsike clover, which appears to excel every other species now cultivated. The flower of it is white, tinged with

red, and it was sown on the 1st of June 1835. Mr. Gow exhibited also 6 specimens of tender flowers, and 6 varieties of Chinese roses. Among his specimens of hardy shrubs were 20 varieties of rhododendron, and 11 of the helianthemum. There were exhibited by Mr. Niven from Keir 127 seedling violas, and 12 varieties of rose peonies; by Mr. Weir, Kennet Garden, *Pæònia* arbòrea, Pà*via* flàva, Eùtoca víscida, striped antirrhinum, and other flowers; also apples (French crab) of crop 1835, in excellent preservation: by Mr. Ramsay, Dollar Botanic Garden, 50 fine shrubs in flower, calceolarias, Chinese roses, violas, and a large quantity of evergreens and flowers for adorning the rooms. Many flowers and flowering plants were sent. Among the ranunculuses, were some seedlings, best three from seed saved in Britain since 1834, Mr. Somerville. Pinks, seedling, best six varieties, Mr. Gow, gardener to Count Flahault, Tulliallan Castle. Among the fruit and vegetables were some apples, best-flavoured six, two varieties, three of each, with mode of preservation detailed along with the fruit; 1st, Mr. Weir; 2d, Mr. Trotter, gardener to James Johnstone, Esq. of Alva; and some potatoes, best twelve, seedling, three varieties four of each raised since 1833. Those brought forward by Mr. Paxton (the only ones produced) were remarkably fine, but only two varieties. (*Stirling Advertiser*, August.)

September 14. — Both the large rooms were very tastefully fitted up for the occasion, and adorned with evergreens and wreaths of flowers, under the direction of Mr. William Williamson; the lower apartment containing all the articles for competition, and the upper those for exhibition. Among the embellishments of the latter was a splendid crown of flowers, with the letters V. R. (in honour of our gracious queen). A cart-load of evergreens and flowers was kindly furnished by Mr. Gow, Tulliallan Gardens, and which was sent for by Thomas Ritchie, Esq., free of expense. Among the numerous articles exhibited were Jargonelle pears, and two fine bunches of white muscat grapes, raised in the open air, from Robert Jamieson Esq.; numerous perennial flowers, and three fine assortments of apples (crop 1836), from Kennet Garden; more than 80 varieties of seedling pansies; many fine specimens of hardy, herbaceous, green-house and hot-house plants, with 12 very superior dahlias, from Dollar Botanic Garden. Among the dahlias for exhibition, there was a box from Mr. Donaldson, Devon Iron Works, containing 24 different sorts, and some very astonishing vegetables, viz. a late Drumhead cabbage, from Mr. Meldrum's garden, weighing no less than 31 lb., and another 30 lb.; and two early Dutch turnips, weighing 12 lb. and 9¼ lb., all from Mr. Cowan's garden. A magnificent bouquet filled the beautiful terra cotta vase kindly presented to the Society last year by Mr. Bald. Among the prizes were the following: — Wine, home made, best sparkling, Mr. Finlayson. Wine, any other sort, from fruits or herbs raised in Scotland, 1st (black currant), Mr. John Frame, merchant, Alloa. Cider, best, made from apples raised in Scotland, Mr. Finlayson, Moss-house, best model of, Mr. J. M'Grouther, journeyman, Alva Garden. Cottage-garden, the best kept, Mr. J. Paterson, Carsebridge. (*Ibid.*, Sept. 28.)

The Anniversary Meeting of the Dumfriesshire and Galloway Horticultural Society. — Sept. 21. The display of fruits and vegetables was rich and abundant; though, we believe, it was considered by first-rate judges somewhat inferior, both in appearance and quality, to what has been made on former occasions. We have seen, also, a fuller and more fanciful show of flower-built grottoes, &c.; though, certainly, Mr. Kelloch's church, constructed of variegated flowers, is one of the best things ever executed by that clever gardener. The following were among the prizes awarded: — Apricots, from open wall, Mr. James Kelloch, gardener to W. Younger, Esq., of Craigielands; grapes, heaviest bunch, Mr. J. Ferguson, gardener at Kirkmichael House; grapes, without fire-heat, Mr. James Cunningham, gardener at Nunholm; pine-apple, Mr. Hannay; plums, greengage, first prize, to Mr. James Webster; collection of dried plants, two prizes, one to Mr. George Erskine, journeyman gardener at Drumlanrig; and one to Mr. James Henderson, journeyman gardener at Craigielands. (*Dumfries Herald*, Sept. 22. 1837.)

Upper Annandale Horticultural Society. — July 26. The premiums, without exception, are limited to cottagers' and kitchen-gardens, where no regular gardener is kept, and a wonderful degree of emulation has been excited throughout the community to excel in the rearing of the more delicate kinds of flowers, as well as the cultivation of more substantial fare for the table. The show took place in the ball-room, which was tastefully festooned with evergreens and flowers of every hue, while the principal entrance was ornamented with a beautifully finished cornucopia, the handiwork of Mr. Kelloch. On a table, extending from one end of the hall to the other, stood the various articles as arranged for competition. At the upper end of the table was placed a colossal bouquet of flowers of the rarest kinds and richest varieties, arranged with the most delicate skill, and elegantly surmounted with an imperial crown, which presented to the fancy a fine representation of our sovereign Victoria. At the other end stood a very ingenious model of a mill-wheel, constructed also of flowers; while the intervening space was filled up with various other bouquets, amongst which we observed a beautiful collection of wild flowers. They were arranged in a basket, round the thistle, the rose, and the shamrock. Mr. Charters, Star Inn, exhibited a quantity of most excellent late field potatoes. (*Dumfries Courier*, July 26.)

Sept. 15. The fruit and vegetables exhibited by the competing members were all of gigantic growth; and the keenness of the competition showed distinctly that a taste for gardening has been aroused in this part of Annandale, which cannot fail to produce a good effect. Best design of a bouquet, first prize, Mr. John Austin, Milton Mill; finest variety of annuals, Mr. John Russell, Moffat; best bee-skep, Mr. Marchbank, Buckrigg; best model of a barn-rick, first prize, Mr. Thomas Little, Cleughfoot; best riddle, Mr. Thomas Beck, Moffat; neatest-kept garden, first prize, Mr. James Hastie, Marchbank Wood. Miss Fife received a prize for a number of very tastefully executed artificial flowers. Mr. Kelloch's design of the third kirk in Dumfries was most tastefully executed; as also a model of a windmill, by the miller of Milton Mill. A silver medal, the gift of Mr. Alex. Johnstone, Jun., Manse of Moffat, was afterwards competed for by the professional gardeners in the district, and won by Mr. Kelloch, gardener to Wm. Younger, Esq., of Craigielands. (*Dumfries Herald*, Sept. 22. 1837.)

St. Andrew's Horticultural and Floricultural Society. — June 14. The most conspicuous feature in this competition was the tulip, of which a great number were presented, some of them very fine flowers; but none of them, in our opinion, came up to that perfection in the distribution of the colours that is required by the florist. The calceolarias, geraniums, heaths, green-house plants, and hardy plants in plots, were most beautiful, and, with several bouquets and other plants, covered the five large tables of the hall, which were well arranged, and had a most pleasing effect. We must particularly notice a sweepstake taken by the Cupar Horticultural Society with one single individual of our society (Major H. L. Playfair, of St. Leonards), for the best thirty geraniums. We have no means of knowing what sort of geraniums are possessed by the Cupar Society, as they were not shown; but at our meeting appeared those of Major Playfair, and we can safely state that we have never seen finer flowers. (*Fifeshire Journal*, June 22.)

July 19. The most inviting article in this competition was the show of grapes; and we are happy to state that every cluster in each variety reflected great credit on the growers. The strawberries were very fine and large, more particularly Keen's seedling, which is decidedly the best for general cultivation. The Aberdeen seedlings were also very fine; and, although a smaller strawberry than Keen's, far surpassed it in flavour. Amongst the flowers, we think the antirrhinums took the most prominent place in the prize list; there were, besides the carnation-striped, several other new varieties. Mrs. Gillespie Smyth of Gibliston, in particular, showed to the meeting a handsome bouquet of fine-blown double yellow roses, a rose which is by no means common in this quarter. Of vegetables, we may mention the cauliflower, as being the closest

competition of any thing in the hall. On the whole, this was a most excellent display of fruit, flowers, and vegetables; and, although competitors are confined to a small number of specimens in every class of articles, the whole tables of the hall were completely covered. Among the prizes were; to Mr. Smith, gardener to John Small, Esq., of the Priory, St. Andrew's, for best plant of *Sálvia fúlgens*, best calceolarias, best globe and anemone-flowered georginas, best muscadine grapes, best seedling grape (raised from the muscadine, but the judges pronounced it higher flavoured than the fruit of the mother plant), and best cauliflower; and to Mr. Falconer, gardener to Sir David Erskine, Bart., of Cambo, for best Chinese roses, best phloxes, best antirrhinums, best design (a crown), best camellia-flowered georginas, best Hamburg grapes, best Frontignan grapes, best muscat grapes, best scarlet-flesh melon, best green-flesh melon, best cucumbers, best apples of 1836, best hautbois strawberries, and best beans. (*Fife Herald*, July 27.)

Dunfermline Horticultural Society. — *July* 11. The collection of flowers, fruits, and vegetables was great and splendid.

Colinsburgh Horticultural Society. — *Sept.* 19. This was one of the best exhibitions the Society ever had since its commencement, particularly as related to dahlias, which were uncommonly rare and beautiful, and far exceeded anything of the kind ever produced in Fife. Besides the articles for competition, there were produced, for exhibition only, the following, all very much admired: — 5 different kinds of hardy annuals, from Grange; 4 seedling apples, from William Black, Kilconquhar; pine-apple, from Grangemuir; 2 sorts of apples, from ditto, crop 1836. Mr. Goodal, gardener to the Marquess of Lothian, Newbattle Abbey, won prizes for the best 12 camellia-flowered dahlias, best seedling ditto, and best bunch of muscat of Alexandria grapes. (*Fife Herald*, Sept. 28. 1837.)

Auchenbowie and Plean Horticultural Society. — *Sept.* 16. Among the prizes were, for a collection of dried native plants, with the names, first, John Stewart; flower clump, best arranged, first, John Stewart; gardens, best kept, first, John Stewart. Extra premium, for gaining the greatest number of prizes during the season, John Stewart.

Denny and Dunipace Horticultural Society. — *Sept.* 9. The fruits, flowers, and vegetables exhibited on this occasion, both by amateur and professional horticulturists, were of very superior quality, and certainly reflect great credit on the taste and skill chosen in rearing such a variety of excellent productions. (*Stirling Observer*, Sept. 28. 1837.)

Cupar Horticultural Society. — *April.* Among the articles sent for exhibition were, a very beautiful bouquet of green-house plants, from Mr. Brewster, gardener, Balcarres; seedling heartsease and seedling apples, from Mr. D. Henry, merchant, Ceres; seedling potatoes, one and two years from seeds, from Mr. Marshall, blacksmith, Luthrie. (*Ibid.*)

Sept. Among the articles sent for exhibition, the following deserve particular notice: — Coxcombs, from Mr. Jeffrey, Rankeillour, measuring 2 ft. across the flower; a collection of dahlias, from Mr. D. Henry, merchant, Ceres; a collection of dahlias, from Mr. Forrest, Ramornie; a splendid collection of carnations, from Mr. Berry, Pitfour; a splendid collection of 23 varieties of seedling petunias, of every shade and colour, many of them beautifully striped, from Mr. James Stewart, Wemysshall; a fine collection of dahlias, new bush squash, new gigantic sunflower, from 12 ft. to 15 ft. high, *Lupìnus grandifòlius*, white lobelia, *Láthyrus latifòlius álbus*, *Datùra* ceratocaúlon, measuring 6 in. across the flower; 6 new annuals; a collection of very beautiful seedling heartsease, among which was particularly admired, for size, form, and beauty, equalling anything of the kind we have ever seen, Ewing's Countess of Leven; besides a great variety of rare and beautiful plants, all from the nursery of Mr. Ewing, seedsman, Cupar. (*Fife Herald*, Sept. 28. 1837.)

Grand Fête of the Cupar Horticultural Society. — *October.* The decoration

with evergreens and flowers of the county rooms, where the entertainment was held, was executed with excellent taste. In consequence of the late period of the season, the variety of kinds of flowers on the exhibition-tables was somewhat limited; but this was amply made up by a most magnificent display of dahlias. Among the flowers which graced the *fête*, particular mention deserves to be made of two splendid collections of dahlias, from the nurseries of Messrs. Henderson and Son, Brechin, and Mr. W. T. Handyside, Musselburgh: those of Mr. Handyside were especially admired. Mr. Ewing directed the execution of the decorations of the county rooms, and had a band of music likewise in his nursery, which was open to the company on the occasion. (*Ibid.*, Oct. 5.)

Kirkaldy Horticultural Society. — April. Among the numerous prizes awarded were the following: — Mr. Peter Crocket, Raith, best auriculas, best broccoli; Mr. C. M'Intosh, Balmuto, best seedling auriculas, best seedling polyanthuses, best hyacinths, best double primroses, best double wallflowers, best lettuce. (*Fife Herald*, April 27.)

Sept. 21. This was the annual meeting; and, though the articles for competition and exhibition were worthy of admiration, as well as highly creditable to those under whose superintendence they had been reared, we cannot fail to express our deep regret that the characteristic spirit of emulation which once existed amongst its members should now exhibit so palpable marks of decline. Among the prizes were: to Mr. Robert Fowlis, Fordel, for best 6 peaches, three sorts, two of each, from the open walls; best 8 fuchsias, sorts, named; best 6 salvias, sorts, named, &c.: to Mr. John Roxburgh, Colinswell, for best 6 figs, heaviest 12 jargonelle pears, best seedling dahlia from seed sown in 1837, &c.. and to Miss M. J. Hume, Kirkaldy, for best original drawing of any British or exotic plant in flower. In addition to the articles for competition, there were many valuable articles presented solely for exhibition; amongst which, the following were considered worthy of notice by the judges: — By Mr. Sang, Kirkaldy, beautiful collections of dahlias, of stocks, of hollyhocks, and a collection of fine plants, a number of rare and beautiful cut flowers, varieties of new carrots, and a quantity of pearl onions; by Miss Shoolbred, Auchtermuchty, a basket of beautiful champagne currants; by Mr. Kelloch, gardener, of Craigielands, a model of a summer-house. This gentleman deserves the highest praise for this excellent and truly well got up specimen of architecture. (*Fife Herald*, Sept. 28. 1837.)

Stirling Horticultural Society. — May 16. The display of gardent produce, although by no means extensive, was, considering the lateness of the spring, both varied and good, and evinced great diligence and zeal on the part of the practical members, who have had so much to contend with in bringing their specimens to maturity.

The following were among the articles competed withr, and for which prizes were awarded: — Auriculas, seedling, Mr. Ninian Niven, gardener to Archibald Stirling, Esq., of Keir; rustic gate, James Don, journeyman gardener, Kippenross. The following added very materially to the interest of the collection: — from Blairdrummond, a branch of ripe May duke cherries, raised in the hot-house; a brace of long prickly cucumbers, sea-kale, two dozen well-sized early potatoes, new early horn carrot, blanched rhubarb, and green-house and herbaceous cut flowers. From Sauchie, a collection of violas or pansies, rhubarb; 4 Altringham carrots, aggregate weight, 7¼ lb. From Keir, 74 sorts of violas, a collection of hyacinths; and a brace of Niven's long green cucumbers, 14 in. in length. (*Stirling Observer*, May 18.)

Sept. 26. — The display, as a whole, was, notwithstanding the backward nature of the early part of the season, fully equal to any of its predecessors. The flower department was excellent. Model of a cottage, James Don, journeyman gardener, Kippenross. Among the articles presented for exhibition, were the following: — From Powis House, herbaceous flowers; apples, crop 1836 and crop 1837: from Ardoch House, palm Savoy black turnip, a collection of seedling potatoes; from Shaw Park, per Mr. Williamson, Alloa, a col-

lection of seedling picotees and carnations; from Wester Plean, red top white and red top yellow turnip; from Sauchie, cauliflower, silver beet, and carrot; from Barnton, Persian white cucumber; from Comely Bank, two very large drumhead cabbages, in tubs. (One of these gigantic articles weighed, although divested of a many of the larger outer leaves, no less than 49 lb. It was also somewhat remarkable for being studded around with upwards of 22 neatly formed cabbages in miniature.) From Major Baird of Park, a collection of flowers, also fruited branches of Siberian crab; from Mr. Campbell, writer, seedling calceolarias; from Mr. Hutton, Mill of Torr, a curiously formed white globe turnip; from Mr. Cassels, Kepp, one large drumhead cabbage; from Mr. John Stewart, Wester Plean, a bouquet of flowers; from Mr. Laing, gardener, Stirling, two drumhead cabbages, and a new variety of cabbage, the leaves of which are said to be fit for using as sea-kale; from Messrs. Drummond, a collection of named pansies, dahlias, herbaceous flowers, also garden chairs. (*Stirling Advertiser*, Sept. 28.)

Falkirk Horticultural Society. — Sept. Among the prizes were the following: — Carnations, best four seedlings, raised since 1834; 1st, Mr. J. Russell, Arnotvale. Tender annuals, finest specimen in pot; 1st, Mr. George Miller, gardener to the Right Hon. Lord Dundas, Kerse House. Bouquet of flowers, the finest, Mr. Alexander Smith, gardener to William Forbes, Esq., of Callander, M.P. A copy of Loudon's *Encyclopædia of Cottage, Farm, and Villa Architecture, and Furniture*, presented by Provost Aitken, for the finest twelve dahlias, was gained by Mr. Alexander Smith.

Amongst the numerous articles forwarded for exhibition, and which elicited deserved admiration from the visiters, we may particularise, — from Callander House, Mr. Smith poured forth, as heretofore, a rich array of rarity and beauty; among which was Amaryllis Johnsoni with six blooms. From Kerse House, Mr. Miller produced a splendid galaxy of fine flowers, as a tasteful bouquet, which had a dazzling effect; two superb pelargoniums; a giant gourd, 5 ft. in circumference, and eight varieties of ornamental gourds. Mr. John Watt, cabinet-maker, Falkirk, 12 superior apples. David Dow, gardener, Falkirk, a lot of Bishop's Chamoes potatoes, the fourth year from seed, raised by Thomas Bishop, Esq., Methven Castle, Perth. Mr. John Johnston, bootmaker, Falkirk, an unprecedented specimen of early cabbage, which weighed 34 lb., and surprised even professional horticulturists; a monstrous late cabbage, the heart measuring 4 ft. in circumference; and the whole were reared by his improved method, which has long rendered Mr. Johnston famous as an amateur. Mr. John Russell, Arnotvale, fine seedling carnations. (*Stirling Advertiser*, September 28.)

The Kilmadock and Kincardine in Monteith Cottage and Farm Garden Society. — Sept. Though this was the first exhibition of the Society, the number and excellence of the articles of fruits, flowers, and vegetables brought forward for exhibition and competition exceeded the expectations of the most sanguine. We cannot, however, omit noticing a splendid bouquet, a great variety of dahlias, ten sorts of apples adapted for cottage gardens, four varieties of turnips, gourds, German greens, white and red carrot, beet, parsneps, and various sorts of potatoes, from the garden of Blairdrummond. There were also exhibited a collection of dahlias, 60 sorts of pansies (some of them very superior), calceolarias, fuchsias, and China asters, from the garden of Deanston; dahlias and other flowers, and some excellent vegetables, from Ochtertyre garden; and a variety of dahlias and other flowers, and vegetables, from Newton. Neatest kept cottage and garden, 1st, John M'Kinlay. Best cultivated garden; 1st, John Buchanan. Best kept cottage (interior); 1st, Daniel Donaldson. The room was most tastefully decorated with all sorts of evergreens and flowers; and, when the judges had finished their arduous task, the public were admitted. It was delightful to see so many persons crowding round the tables, eagerly examining the different articles; and it was no less pleasant to see the happy faces of the different successful competitors when receiving the prizes from the president, which were chiefly horticultural implements. A spirit

of emulation has now gone forth among the farmers and cottagers of the two parishes, which, we are persuaded, will have the effect of greatly improving the cultivation of their gardens. (*Stirling Advertiser*, Sept. 28. 1837.)

IRELAND.

Dublin. — *Horticultural Society of Ireland. — Sept.* 8. No less than 80 varieties of dahlias, furnished by Mr. Henry Davis, seedsman and florist of Hillsborough, were arranged in several frames. A very superior collection of the same flower, of the richest and most variegated tints, was also exhibited by Mr. Fennessey, from Waterford. A large plant of the *Mùsa* sp., and a beautiful young palm, both spreading their large leaves high above the other plants, gave an air highly picturesque to the whole. Two specimens of that beautiful and rare flower the Strelítzia regìnæ, in full bloom, attracted a good deal of attention. Every variety of corn and pulse, the mangold würzel, turnip, &c., and all the produce of the kitchen-garden, had their respective representatives, and each of excellent quality. The show of fruits was very good. (*Gard. Gaz.*)

Belfast Horticultural Society, established 1829.—*March* 14. The following were among the prizes: — Stove plants, the best six, M. Andrews, Esq., Ardoyne; gardener, Patrick Campbell. Green-house plants, the best six, Hugh M'Calmont, Esq. Pelargoniums, the best six, Hugh M'Calmont, Esq. Camèllia japónica, the best four, M. Andrews, Esq. The stove and green-house plants generally, the tender heaths, camellias, pelargoniums, auriculas, hyacinths, and double primroses, were all excellent, and in abundance; and we have no doubt that the judges found some difficulty in deciding on the best specimens in the respective classes. The following were particularly well grown: — Hòvea Célsi, Borònia serrulàta, Brugmánsia suavèolens, and Deùtzia scàbra. There was, also, a beautiful specimen of the tree peony, from the garden of Mr. M'Calmont. The fruits were in fine preservation; and the sorts exhibited were of the most approved kinds. Some excellent samples of new potatoes were presented, as well as early asparagus, cucumbers, and sea-kale (the last two in great perfection, from the gardens of Lord Bangor). The vegetables, generally, were admirable. (*Northern Whig*, March 30.)

June 2. — The junction of the two societies (the Belfast and Ulster), under the name of the Northern Horticultural Society, tended, of course, to increase the number of competitors; and, although the nature of the present season greatly retarded the labours of the florist and horticulturist, yet the exhibition was splendid. The flowers were abundant, and of first-rate quality; the strawberries, cherries, &c., rich and ripe; and the vegetables, grasses, &c., such as proved the skill and care of the cultivators. The agricultural productions were confined to such as had grown in regular crops, and not in gardens or nurseries. The products of Mr. M'Calmont's garden, and the pansies and tulips from Mr. Davis's nursery, seemed to attract much attention, and got the first prizes. We never saw a finer collection of pelargoniums than those produced from Abbeylands. (*Ibid.*, June 4.)

Northern Horticultural Society. — Autumn Show, 1837. The exotic productions presented many interesting and beautiful groups, especially the numerous varieties of the genus Fúchsia. There was one specimen, in particular, of Verbèna Tweedièna, at the end of the room, placed amongst the fruit, that shone most conspicuously; this admirably grown plant was cultivated by W. G. Johnson, Esq., of Fortfield. The dahlias presented a mass of gorgeous beauty and variety. The China asters were also very fine. The fruits were, perhaps, better than we have ever seen here at this season of the year. The vegetable and agricultural productions were not only of the first quality, but arranged in the most perfect order.

We find we have omitted to notice, in the above, two collections of fine seedling dahlias, which were exhibited: one raised by Mr. Anderson, gardener to the Hon. Chas. Brownlow, of Lurgan House; and the other produced by Mr. Allen of Enniskillen. Among the six striped dahlias, which obtained the first prize, the one which attracted the greatest notice, and was most esteemed, was

the Northern Whig, a seedling raised last year, by Mr. George M'Cullagh of Nurseryville: its petals are finely quilled, the shape of the flower quite perfect, and the colours well defined; the ground a deep lilac, with white stripes. Mr. M'Cullagh has a number of plants of it, raised from last year's seedlings now in flower, in his beautiful nursery grounds at Comber. This is, probably, the finest dahlia, taking it altogether, to be found in any collection in Great Britain or Ireland. The bouquets were remarkably handsome: one of them, from Arbuthnot Emerson, Esq., tastefully representing an imperial crown. The seedling pelargoniums, exhibited by Mr. Davis (Ogle's Grove Nursery), were accounted very fine. A basket of very handsome plums, from Lord O'Neill's gardens, excited much admiration. There was no prize for them, as they are of a new kind, and have now been introduced into this country for the first time, by Mr. Hume, his Lordship's talented and well-informed gardener. Mr. Anderson's grapes were, also, much admired. Indeed, the fruits and vegetables were the best, probably, ever shown in Ireland. The exhibition-room was very tastefully ornamented; but it was quite too confined for the number of visiters who attended. The crush was inconvenient to a degree. We would suggest the propriety of the friends of horticulture, and the lovers of flowers, raising funds for the erection of a suitable building, which might be applied to other objects connected with both the useful and ornamental arts; such as painting, sculpture, &c. We are sure such a project only requires a beginning to insure for it permanent success. (*The Reformer*, Sept. 22. 1837.)

Kilkenny Horticultural Society. — April 20. Among the prizes were: best grapes, best strawberries, best peas, best dessert apples, Mr. Johnston, gardener to the Marquess of Waterford; best kitchen apples, Mr. Monk, gardener to the Lord Bishop of Ossory and Ferns; best auricula, and best polyanthus, Mr. White, gardener to the Countess of Desart; best double hyacinths, best stove exotic, best green-house plant, best pelargoniums, best ericas, best herbaceous plants, and best anemones, Mr. Carrigan, gardener to the Marquess of Ormonde. (*The Kilkenny Moderator*, April 26.)

The Autumn Exhibition of the Waterford Horticultural Society was held on Aug. 16. The stages exhibited various articles, particularly in the green-house department, which were never before presented in this city, and which were the subject of very considerable interest. Over one of the doors of the room was traced with splendid flowers a large and brilliant star, and over the other were the regal initials V. R. I., surmounted with the imperial crown, superbly emblazoned. On the walls of the Town Hall, at each end, were traced "The Marquess of Waterford, Patron," "The Right Hon. Sir J. Newport, Bart., President;" and on the side wall stood, "Waterford Horticultural Society." Appropriate as were these devices, their design was equally admirable and ingenious, and their execution rich and tasteful, the letters embracing an innumerable and well-assorted collection of dahlias of every hue and tint.

In a corner of the lecture-room was a specimen of that great wonder, which has recently made so much noise, the celebrated cow cabbage, sent in by Joshua W. Strangman, Esq. It resembled a regular tree, with a foliage of cabbage leaves. The flowers, particularly the dahlias, and the bouquets, were very beautiful. The grapes were all that the most luxurious could covet. The pines were very large and fine, particularly those from Ballysaggartmore, in the west of the county, the seat of Arthur Kelly, Esq., to whose gardener, Mr. Smith, were awarded the two first prizes, for size and flavour. The fruit and other articles sent in from Curraghmore were well in keeping with the very high reputation which, far and near, Mr. Johnston, the gardener of the Noble Marquess, has already established for himself. The splendid gardens of Lord Ormonde, and the Bishop of Ossory, at Kilkenny, also contributed. The vegetables sent in for exhibition were splendid, and colossal in their proportions; and the advance of improved modes of culture was discernible in this as well as in the other departments. On the long table in the Town Hall were two splendid fuchsias, exhibited by Charles E. Gadsden, Esq., and by Mr. Power, gardener at Bellevue. Here, also, were two palms, from Newpark, the seat of Sir

John Newport, whose conservatories and green-houses have ever been distinguished by the rarest and choicest exotics. The high appreciation in which these palms were held was testified by the award of an extra prize. An uncommonly beautiful collection of pelargoniums was sent in by Richard Cooke, Esq., and a most valuable group of green-house plants was exhibited by the same gentleman. The balsams, from Curraghmore were uncommonly fine; and the coxcombs, from the same garden, were universally admired. (*Waterford Mirror*, Aug. 19. 1837.)

Wexford Horticultural Society. — *Aug.* 4. Numerous prizes were awarded; and, among others, one to Henry Cooper, Esq., for a seedling pelargonium of great merit.

REVIEWS.

Art. I. *Lectures on Landscape-Gardening in Australia.* By the late Mr. Thomas Shepherd, of the Darling Nursery, Author of "Lectures on the Horticulture of Australia." Small 8vo, 95 pages. Sydney, 1836.

Mr. Shepherd was upwards of twenty years a nurseryman and landscape-gardener at Hackney, where he paid 20*l.* an acre for ground, nearly half that sum in addition for taxes, and yet "worked hard" for many years for little more income, as he informs us, than that of a labourer (p. 85.). He went to Sydney in 1826, established the Darling Nursery there; in 1834 delivered lectures on horticulture; and, in June, 1835, one lecture on landscape-gardening; and died in the August of that year. He had prepared seven lectures on landscape-gardening; but was unable, from ill health, to deliver more than the first. The whole of these lectures were, in 1836, edited and published by Mr. John M'Garvie, Mr. Shepherd's successor in the Darling Nursery; and they are dedicated to A. M'Leay, Esq., F.R.S., &c., late Colonial Secretary, one of Mr. Shepherd's "first and most liberal friends."

We have glanced over these lectures with considerable interest, and marked a few passages as worth extracting. What struck us as most remarkable in them is, the author's calculation to show that a gentleman, with 30,000*l.* capital, might establish himself and family in the neighbourhood of Sydney, "in a style equal to a gentleman in England or Scotland who can command 10,000*l.* sterling a year." His income the first year would be 2137*l.*, and his annual expenditure 1180*l.*; leaving a balance of 957*l.* to meet exigencies, and secure an independent fortune for his six children. He next shows how a person possessing 20,000*l.* (for which, at Sydney, he would receive 10*l.* per cent, or 2000*l.* per annum, or, in Britain, 3 per cent, or 600*l.* per annum) might lay it out in land at Sydney, so as to have an annual income of nearly 1500*l*, and lay by enough for a handsome fortune for his children. "A capitalist with 5000*l.* sterling might establish himself in New South Wales as a settler, along

with his family, in competence and comfort. He would advise this person to purchase 3000 acres of land, say at 10*s.* an acre, amounting to 1500*l.* sterling. He should purchase 1000 ewes and lambs, at 1000*l.*; and should build a cottage in which to reside till he acquire additional wealth by the increase of his flocks." After giving an abstract of his yearly expenditure and income, he says, "It will be perceived that, in the first year, 703*l.* will be realised by wool, increase of lambs, and agricultural produce. This will appear a small sum when compared with the money sunk; but it should be remembered that a large portion of this money will not be required hereafter, and an advance or increase may reasonably be expected in succeeding years. It may require ten years' exertion before the person possessed of only 5000*l.* capital will be able to form an establishment equal to that of persons commencing with 20,000*l.* or 30,000*l.* capital; but by industry he will infallibly succeed; and, at the end of that time, the emigrant may place his family on a footing of the highest respectability, opulence, and comfort." (p. 54.)

The passages which we have selected are the following: —

"I have now lastly to point out a plan of proceeding for small farmers who may have large families, and who may do exceeding well here, if they conduct themselves with prudence. I would recommend the following plan to secure their future prosperity: — I would advise them to purchase no lands, but to commence by renting a farm of from 100 to 1000 acres, within 50 miles of Sydney, unless it may be situated at Hunter's River. In that case, a farm may be rented 100 miles from Sydney, that district having water carriage to the capital. A farm should be selected which produces good grass for cows, and which is also good for agricultural produce. It may generally be rented at from 2*s.* to 5*s.* an acre, unless it were situated near Windsor, in the Hawkesbury district, where it rents for 1*l.* per acre. The Hawkesbury is a most desirable spot for industrious emigrants to settle upon, as the soil is deep, rich, light, and easy to work, at all seasons of the year; and it produces the best and most certain crops of any other district known to me in the colony. By hiring or renting ground, a person of small capital would thereby save all the amount of capital he may bring with him to lay out for cows, pigs, and a team of working oxen, ploughs, harrows, and other necessary implements, to stockhis little farm. But, if a person of small capital were to purchase land at his first commencement, his capital would be sunk by its purchase, or he would have little money left to purchase stock. But, if he were to hire land for a few years, there could be no danger of an industrious, persevering, sober man succeeding to the extent of his wishes. When he has rented a farm several years, he then would be in circumstances to purchase one at a reasonable price, that is from 5*s.* an acre to 1*l.* He will then only have to remove his stock from the one farm to the other, and he would afterwards cultivate his own ground. It would afford him great pleasure to cultivate his own freehold estate, and enjoy its produce. Cows are by far the safest speculation for a man of small capital to commence with, as they produce an immediate income in milk, butter, or cheese, according to the situation of the farm. Agriculture is also a good speculation for a small farmer. Fruit will also pay them: many persons in this colony have realised fortunes by growing oranges; so that small farmers have many opportunities of making money if they were industrious. I am decidedly of opinion that small farmers in England or Scotland would benefit themselves very materially by settling in New South

Wales, particularly those who may have large families. I am certain the home government would take this view, were the legislature here to take it into consideration; and they would see that no emigrant is more valuable than the small farmer of England and Scotland. No man works harder, or brings up his children in a more industrious manner. Were encouragement given by the government in the payment of passage money, hundreds of small farmers would emigrate with their families. Thus, young men in the colony would be provided with industrious wives, and landed proprietors with good overseers; and the community would be supplied with the necessaries of life from their farms. These are the settlers to whom we must look for examples of good moral conduct. Their offspring will be trained to such conduct throughout the colony, and their influence will be every where felt."

"In England, a number of architects and land-surveyors, who have been capable of giving designs for mansions and other buildings, and of surveying and drawing the plan of extensive land estates, have undertaken to give designs for the embellishment of parks, pleasure-grounds, and gardens, in what they pretend to call the new improved style of landscape-gardening; but they have mostly been ignorant of the profession of horticulture, either as to the practical or scientific principles of the profession. Men who have no knowledge of the cultivation of the earth, to fit it for the healthful growth of trees or plants, cannot be supposed qualified to know in what soil they should be planted. Men who scarcely know the name of a tree, exclusively of a few such as are known to any common farmer, have had the presumption to set up as landscape-gardeners; merely, I suppose, because they could draw a pretty plan or map, and print a splendid title. It is beyond my comprehension, how such men, who must have had a liberal education, can presume to give designs for a new creation of objects, fit for the pencil of the landscape-painter, who have no knowledge of the trees proper to be planted, which would, in connexion with other objects, produce an harmonious effect. Such persons must entertain an idea that the profession of a landscape-gardener requires little knowledge, art, or skill in its attainment. I can assure such vain pretenders, if this is their opinion, that the profession of a gardener requires a great deal of knowledge, of art, and of skill; and that there are principles in the profession which render such persons incompetent to act as landscape-gardeners."

"It has often struck me, that horticulturists deserve greater praise for their exertions than any other class of professional men; for, without a classical education, as many professional men have had, they have worked their way through every difficulty, until gardening has been raised by them to such excellence, that it has become the admiration and delight of kings, nobles, and men of the highest attainments in learning. It is my opinion, therefore, that a professional gardener, who has been taught land-surveying and mapping, landscape-painting, and a little knowledge in architecture, and who also takes great delight in pastoral poetry, and landscape scenery, must have much more comprehensive knowledge for entering upon the studies of landscape-gardening than either an architect or land-surveyor, who knows nothing of horticulture. I therefore would recommend to land proprietors to give a decided preference to landscape-gardeners who also profess horticulture."

As specimens of what may be effected in landscape-gardening and suburban residences by taste, wealth, and perseverance, in the neighbourhood of Sydney, Mr. Shepherd gives, by permission of the proprietors, "a detailed description of improvements made on two of the most highly finished places of residence and ground in the colony. These are, Elizabeth Bay, the intended seat of Alexander M'Leay, Esq.; and Lyndhurst, the residence of Dr. Bowman, both on the banks of the river."

"The estate Elizabeth Bay is situated within the town boundary of Sydney, in a delightful situation, and bounded on its north side by the river and harbour of Port Jackson. On one side is a circular bay half a mile in extent, in a commanding style, between rocky promontories of lofty elevation, branching off to the right and left. Between these promontories, the ground sweeps round, by a grand and gradual descent, into a low and fertile flat of about ten acres, which has been cleared from the natural woods. The outline of this flat ground is also circular, terminating in an abrupt slope, beautifully furnished with rocks, trees, and bushes, forming a splendid amphitheatre. A range of luxuriant woods and precipitous rocks follows the boundary of the water on the north side, till it reaches the boundary line of the estate, forming a straight line by the side of a new road, about a mile in length, to a corner of an angle where the main entrance gate is placed. A similar range of beautiful woods and rocks extends from the other promontory for half a mile, by the side of the water of a large bay, ending in a flat of several acres, and thence running up to a fence forming the south-east corner of the boundary. Thus, this estate has the entire command of one bay on the north, and one side of a bay on the east; and part of the south side ends in a flat of good land of several acres in extent.

"The high lands and slopes of this property are composed of rocks, richly ornamented with beautiful indigenous trees and shrubs. About ten acres have been cleared for pasture, which space has been laid off in two paddocks into two enclosures. The deficiency of pasture is a fault common with every other estate near Sydney, and prevents them from being laid off in the useful and ornamental style on a scale of magnitude. Sensible that his land is not calculated for pasture, Mr. M'Leay has very judiciously applied but a small space of it for that purpose, and has preserved his native trees and shrubs to extend his landscape-gardening. From the first commencement, he never suffered a tree of any kind to be destroyed, until he saw distinctly the necessity for doing so. He thus retained the advantage of embellishment from his native trees, and harmonised them with foreign trees now growing. He has also obtained the benefit of a standing plantation, which it might otherwise have taken twenty or thirty years to bring to maturity. The moment the improvements are finished, they will be furnished with full-grown trees. The proprietor has certainly gone to great expense in general improvements. His botanic, flower, landscape, fruit, and kitchen gardens are all on the first scale; and he has also expended large sums in digging out rocks, filling up hollows, making approaches and walks, grass-plots, basins, &c., and in the purchase of foreign trees and plants, which have been arranged with great skill and taste. He has also planted a vineyard of considerable extent upon terraces, which has answered every expectation. The coach house and stables, with other buildings, have been erected upon an eligible site, entirely out of sight of his intended mansion and principal walks. About twenty men have been engaged in these general improvements, which have been going on, in a moderate and judicious manner, for several years; and it will require a few more years to complete the work: but, when completed, the place will probably not be surpassed by any garden in New South Wales.

"I must now point out the nature of the whole design of the improvements on the ground. Great taste has been employed in choosing the site of the mansion. In my opinion, it is so correct, according to the principles of landscape-gardening, that, if one had studied for a century, he could not have selected a better. The mansion is placed upon a flat piece of land, in the bosom of a gentle elevation, furnished with beautiful trees, branching off in thick masses to the right and left. A splendid open lawn is placed in the main centre front of the house, leaving to view, from the adjoining grounds and windows, one of the most interesting prospects of the harbour and shores of Port Jackson. To remove a few touches of nature's harshness, a dwarf ornamental stone wall, having, at two extreme points, corners of ornamental scroll-work, has been raised, surmounted by a curvilateral coping, with a few

inches of projection. This wall forms an elegant sweep, and is bordered by a broad gravel walk. The ground outside of this wall, towards the bay, falls abruptly down a slope, which is richly furnished with healthy and beautiful trees; not in thick masses, but sufficiently so to form a proper foreground to intercept the over-magnificence of the light reflected from the beautiful expanse of water which forms the front of the background on the opposite shore, and which becomes the second distance in the landscape. All the polished scenery below will be in connexion with this situation, branching off to the right and left through ornamental lawns and polished shrubberies, furnished with choice trees and plants from England, China, the Mauritius, the East Indies, North and South America, and from Moreton Bay, Norfolk Island, the Cape of Good Hope, and other places. In a few years, therefore, the beauties of Elizabeth Bay will appear unrivalled.

"At the extremity of this beautiful shrubbery and mowed-grass lawn, wood walks will commence, winding through thickets of trees naturally grouped among picturesque rocks. Here, also, rustic chairs and rustic caves are placed; and the river is seen from them through a rich foreground of natural trees and beautiful creepers. Walks descend from the dwarf wall to a carriage road, which leads to the river, where a convenient wharf has been constructed for enjoying marine excursions.

"Crossing the coach road, you enter through a lattice-work bower, covered with the passion flower, into the botanic garden, laid out in beds and borders of exotic flowers, with elegant sweeping walks, and bowers of lattice-work. These are tastefully arranged, imitating Nature in her loveliest forms, and creating sensations of exquisite delight in the mind. In walking among these lovely trees, you view, on the one side, an amphitheatre of lofty woods; and, on the other, you view a large expanse of water, with ships, small vessels, and boats passing up and down the harbour. The kitchen-garden, pits for producing pine-apples without fire heat, gardener's cottage, vineyard, and terraces sloping to the north, sheltered from the south, and bearing abundance of grapes, follow in succession, and require no particular description.

"This description, which I have given to show gentlemen how much may be made out of the roughest materials nature furnishes, will teach them what may be done on ground favourable for the purpose. If I might be allowed to make any suggestion, it is, that, to complete Elizabeth Bay in a style of the first magnificence, there should be an aviary erected, and particularly a conservatory, at a little distance from the house, close to the hill which backs in the mansion; and a good pinery, with grape vines to produce early grapes. I would recommend an ornamental summer-house, to be placed at the most conspicuous point upon the promontory, on the right hand side of the bay, with a covered-in summer-house, to preserve parties from excessive heat, or from rain. These improvements, which, probably, it is the intention of the respected proprietor to make, would, in my opinion, render Elizabeth Bay one of the most finished residences to be met with in any country.

"There is another first-rate edifice, the grounds of which have been laid off with great attention to the principles of landscape-gardening, Lyndhurst, the seat of Dr. Bowman, to which I shall direct your attention, with a view to enlighten the proprietors of land on the capabilities of their estates.

"This residence is situated on the south side of a branch of the river of Port Jackson. The ground contains fifty acres of land, and is bounded by church land, a new road, and the estate of John Betts, Esq. This estate will have an imposing effect, both internally and externally. The house has three fronts, open to a mowed grass lawn, of considerable extent. The site is placed upon a flat piece of land, about 200 yards from the river: the situation is commanding. The offices are enclosed within a high wall at the back of the house, and are well arranged. A tank, of large dimensions, has been sunk in the back yard, supplied by pipes from the roof of the house; and is built with brick, and covered with cement, with a drain at the bottom. The coach-house and stables are built out of sight of the house, park, and pleasure-

grounds. A road will lead from them, with a bold sweep, through part of the park, to the house, and also from them to a small wharf. The kitchen-garden is in a valley behind the stables: it is composed of rich loam, and has been laid out in straight walks, and planted with fruit trees. The approach of the mansion enters at the south-east corner: it is seen for several hundred yards, and then takes a bold turn towards the coach sweep in front of the house, without any reverse turn, which adds to its beauty. The coach sweep will form an exact oval, the whole width of the front of the house, convex in the centre, and covered with mowed grass. No clumps will be placed in the centre of the lawn, as that would lessen its breadth; but the lawn will be surrounded by a shrubbery, except on the side next the paddock, from which it will be divided by an invisible fence of iron, or posts and chains. The shrubbery, which borders the terrace at the bottom of the paddock, will be enclosed by a post and chain fence. The shrubbery walks will branch off from the approach in front of the house into shrubberies, extending to the right and left. These will be considered parts of the landscape-garden, and will darken the glow of light which is produced by the expansion of the water. The opposite shore has a fine effect from this residence, being richly furnished with beautiful trees, disposed with much natural taste amongst picturesque rocks. At a distance, the landscape is heightened by gentle elevations, conveying the idea of broken ground divided by water.

"This estate commands about a mile of frontage to the bay. It is beautifully wooded, and has a considerable extent of glade, or lawn, within thriving forest scenery. The house is the principal feature in the landscape. Thick masses of wood branch off from the back part of the house. This estate will present a splendid instance of what may be effected by knowledge, taste, and wealth, upon ground to all appearance unfit for improvements. It will be a model for a genteel marine residence. The indigenous trees have been preserved, and are as pleasing as if a new assortment of trees had been planted, and had grown up in their place."

We should be greatly obliged to the proprietors of these two places if they would send us detailed plans of every part of them, including even the house, and domestic and farm offices, together with elevations, sections, and perspective views; the latter both of scenery within the grounds, and of the views obtained from different parts of the house and grounds. We should also wish to have a list of the plants, both indigenous and exotic, and including weeds, in the grounds of each residence. We are aware that at Sydney, this will require some expense and trouble; but should the proprietors give permission, the whole might be easily effected by our correspondents, Mr. Thompson and Mr. M'Garvie, and we should be happy to afford them any information in our power in return.

The publication of such plans and views in England would, in connexion with Mr. Shepherd's statements before quoted, be advantageous to the colony, by giving a more correct idea of the comforts and enjoyments which men of capital in Europe might obtain by settling there. It would also be gratifying to persons in Europe, by showing them the kind of house and the style of living of their friends in Australia, should they have any; or to which they might look as an ultimatum if they thought of going out and settling there themselves. If the requisite drawings and

information are sent us, we will engage to publish them in a manner creditable to all parties.

Art. II. *The Flora of Jamaica; a Description of the Plants of that Island, arranged according to the natural Orders; with an Appendix, containing an Enumeration of the Genera according to the Linnæan System, and an Essay on the Geographical Distribution of the Species.* By James Macfadyen, M.D. Vol. I. Ranunculaceæ—Leguminosæ. 8vo, 351 pages.

This is a work that will be hailed with interest and pleasure by all who have any connexion with our West India settlements; and there is even much in the work calculated to prove instructive to the practical gardener. We allude to Dr. Macfadyen's judicious remarks on the nature, habits, and habitats of such species as are cultivated in our stoves or green-houses. In new editions of any general botanical and horticultural work, such as Miller's *Dictionary* and our *Encyclopædia of Plants*, this new *Flora of Jamaica* will frequently be had recourse to, for the correction of errors, inadvertently committed by preceding writers, as well as for original information.

A systematic account of the plants of Jamaica, Dr. Macfadyen observes, has long been considered a desideratum. "Hitherto, the student of the botany of this island has been obliged to resort for information to the voluminous writings of Sloane, Browne, Jacquin, Plumier, Swartz, Cavanilles, Vahl, &c.; many of which are rare, and with difficulty procured, especially in a situation so distant from Europe. The only work easily accessible was the *Hortus Jamaicensis* of Mr. Lunan; a compilation which must have been found very useful to every one who has endeavoured to become acquainted with Jamaica botany. But, while I acknowledge readily my obligations, especially during the early period of my study, to that work, I must state that scarcely one half of the plants at present known to be indigenous to the island are noticed in it; and that the descriptions are in general defective, and not a few erroneous. To supply these deficiencies has been my endeavour in the present undertaking." (p. v.)

After stating the advantages of adopting the natural system of arrangement in local floras, and acknowledging his obligations to preceding authors on the botany of Jamaica, he states his own share in the work. It has occupied, he says, the greater part of his leisure during a residence of twelve years in the island; during which period he studied the peculiarities of the flora of every district; examined the characters of every plant within his reach; and, during his almost daily rides as a medical practitioner, he had opportunities of watching all the plants that interested him, during the period of their flowering, and till they perfected their fruit. The author modestly concludes

his preface, by expressing a hope that his book will be found "to give a tolerably accurate account of what is at present known of the vegetable productions" of Jamaica.

We shall now turn over a few pages, and make some extracts, as a specimen of such parts of the work as we think will be interesting to gardeners and others, who have no connexion with Jamaica whatever.

Ranúnculus rèpens (p. 3.).— This vile weed, so troublesome in clayey soils, in Britain, and which is found in every part of Europe, in several districts of North America, and in Madeira, has lately been naturalised in Jamaica, from the garden of a gentleman at Cold Spring. Thus it is, that, to a certain extent, the useless or noxious plants or animals, following the train of civilisation, are spread over the world, as well as the more useful species. In England, for example, almost every year, some foreign insect is making its appearance, the eggs of which have been imported along with the plants of foreign countries.

Anòna Cherimòlia (p. 9.) was long since introduced from Peru, and is very common in the mountains of St. David, St. Andrew, and Port Royal, where alone it thrives. The fruit is the most delicious of any of the species; and the flowers are put into snuff, as a substitute for the Tonquin bean. "A tree, usually 15 ft. in height," and, we suppose, deciduous; but this is not mentioned. From the height of the tree, it is evident that it might be readily grown in pots; and, as it is doubtless deciduous, by giving it a period of rest every year, after the wood is ripened in our stoves, there is no apparent reason why it should not bear fruit as well as the orange tree. The fruit is of the size of a shaddock, of a light green colour, with a white pulp and black seeds. As the tree is generally kept in stoves in England, where it has no period of rest, it is not to be wondered that, with us, it never produces fruit.

Monodòra Myrística, the calabash nutmeg, was introduced from South America; and the only tree in the island is in Miss Green's garden at Liguanea, near Constant Spring estate: where, however, it never perfects its seeds.

Nymphæ'a ámpla Dec. is common in lagoons and ponds of water, flowering throughout the year. It is remarkable that a plant so common and so ornamental has not yet been introduced into England.

Argemòne mexicàna, the Mexican, or gamboge, thistle, is very extensively distributed, although, as the name implies, it was at one time supposed to be peculiar to Mexico. It is found in all the warmer parts of the globe, as far south, in the Old world, as the Cape of Good Hope, and as far north, in the New, as Canada. It is common in all the West India islands, in the valleys and hills of St. Helena, and even in the Sandwich Islands.

The fruit is called by the Spaniards *figo del inferno* (*Fìcus infernàlis*), from the prickly hairs with which it is armed; or, according to some, because the seeds will "send any that take them wilfully to the infernal regions, being much stronger than any opium." The milky juice of the plants, on being exposed to the air, changes to a bright yellow; and, on drying, assumes the appearance of gamboge; whence the name of gamboge thistle.

Nastúrtium officinàle, the common water-cress, is found, in Jamaica, in every rivulet not subject to be dried up during drought. This is another plant very extensively distributed; being found from the Cape of Good Hope to Norway, and from Japan to Madeira, in the Old World; and throughout North and South America, as well as in the West India islands, of the New.

Brássica oleràcea, the common cabbage, is cultivated in Jamaica, and brought to as great perfection as in Britain. The seed is generally procured from England or the United States. The turnip is cultivated, but seldom comes to perfection, except in the mountains, where it is grown to a large size, and with a flavour not inferior to the turnips of Europe.

Eriodéndron anfractuòsum, the West India cotton tree, is a deciduous tree of rapid growth, readily propagated from stakes or posts, planted in the ground. "A superb row of these trees at Belvedere pastures, St. Thomas in the East, was established from posts fixed in the earth, in making a common rail fence. Perhaps no tree in the world has a more lofty and imposing appearance, whether overtopping its humbler companions in some woody district, or rising in solitary grandeur in some open plain. Even the untutored children of Africa are so struck with the majesty of its appearance, that they designate it the *God tree*, and account it sacrilege to injure it with the axe; so that, not unfrequently, not even the fear of punishment will induce them to cut it down. Even in a state of decay, it is an object of their superstitious fears: they regard it as consecrated to evil spirits, whose favour they seek to conciliate by offerings placed at its base. The large stems of this tree are hollowed out to form canoes. The wood is soft, and subject to the attack of insects; but, if steeped in strong lime-water, it will last for several years, even when made into boards or shingles, and in situations exposed to the influence of the weather. The young leaves are sometimes dressed by the negroes as a substitute for okras. The wool has been employed in stuffing mattresses; and is said to answer the purpose equally well as feathers, but to be rather warm. The caterpillar of the macaca beetle, considered by some, when gutted and fried, as a very great delicacy, is to be found in abundance in the decayed stems of this tree." (p. 93.)

This tree was introduced into England in 1739, and, when grown in pots, is always stunted; but, as it is of rapid growth, if turned out early in the season, in good soil, and in a warm situation, it would probably make a splendid appearance during the summer months; and, as it is so readily propagated, a stock of young plants might easily be kept in a flued pit, to insure a succession as the old plants were killed off. This mode of treatment might be applied to many of the plants of warm climates now requiring the green-house or stove; and the reward to the cultivator would be ample, in the very superior degree of foliage that would be produced during the summer months. In short, if half the care were bestowed on this kind of culture that is given to dahlias, we should soon have a new world of tropical beauty in British gardens.

Thèa *víridis*, the green tea plant, "was introduced into the garden at Cold Spring by the late M. Wallen, Esq. The house had for many years fallen into decay, and the garden was neglected, and allowed to grow up in weeds. Notwithstanding this, on clearing the land, for the purpose of planting it with coffee, about two years ago, the tea trees were found to have survived, and young plants to have grown up. They are now in a very thriving condition, flowering and perfecting their seeds; and a supply of young plants may at any time be procured." (p. 119.)

Citrus Aurántium, the sweet orange, is cultivated and naturalised, as is the bitter orange. Independently of the excellence of the fruit, the orange is among the most ornamental of Jamaica trees. "It is graceful in its port, with leaves beautifully formed, and of a rich green; and it fills the air with the perfume of its clusters of delicately white blossoms. In the parish of St. John, in particular," continues Dr. Macfadyen, "the trees may be seen in thousands in the pastures and in the negro villages, forming beautiful objects during the months about Christmas, laden with their golden-hued fruit; which, for richness of flavour and for sweetness, cannot be surpassed. In that district, a bitter or a sour orange is rarely to be met with. It is deserving of remark, indeed, that the sweet orange is produced in its greatest perfection in districts which, like that of St. John, belong to the limestone formation; whereas they are very inferior (being more or less sour or bitter, even when raised from seeds of the sweetest sorts) when grown where any of the other rocks prevail. Little or no care is bestowed in Jamaica on the cultivation of the orange. As the fruit, notwithstanding this, is produced in the greatest abundance, and of so fine a quality, it must appear surprising that it is not made an article of exportation, as few of our objects of cultivation would give a more favourable return. Were the fruit carefully hand-picked from

the tree, on a dry day, and, after being slightly papered, packed in common flour-barrels on the spot, there cannot be a doubt but that they would bear the voyage over to England, and arrive there in a marketable condition. We are anxious to establish the clove and the nutmeg, when we have already a tree which would, were it more generally and carefully cultivated, give us an article of exportation for which the demand is constant, and would, in any part of the world, command a market. Few trees are longer lived than the orange, those of the orange groves of Spain having survived 600 years; and few are more productive, some individuals having been known to produce, in one year, 6000 oranges. The sweet orange, according to Dr. Turner, contains malic acid; and, we may ask, might not an effervescing liquor, like cider, be obtained from the juice? As a fruit, it is inferior to none. 'The pulp is cooling and refreshing in fevers, inflammation, and scurvy, and alterative in phthisis and dyspepsia.' The bitter orange is employed in making the well-known preserve, marmalade; the peel is an aromatic bitter; the roasted pulp is an excellent application to fetid sores; and the negroes employ it as a substitute for soap in washing their coarse linens. From the flower a distilled water is prepared." (p. 130.)

Cedrèla odoràta, the West Indian cedar, is a tree with abruptly pinnated leaves, of rapid growth, attaining a considerable height. "This is one of the most valuable timber trees of the island. The wood is of a reddish-brown colour, and has a pleasant smell. The leaves, bark, and flowers of the growing tree, on the contrary, give out, especially when young, and after rains, a most disagreeable alliaceous odour, resembling that of asafœtida or garlic, mixed with that of highly dried tobacco, which is felt very sensibly at a considerable distance. As a timber tree, it is superior to the pitch pine, and is employed for similar purposes. It is particularly recommended for wainscoting rooms, and for chests, and the inside of clothes-presses and drawers, from the circumstance that vermin are known not to breed in it. This may be ascribed partly to the strong odour it exhales, and also to the bitter taste of the wood itself. Hence, though it is occasionally employed to make rum-butts, it always communicates, from the resin in the wood being dissolved, a peculiarly bitter taste. It has been remarked, that pigeons never take to, or breed in, a house made of this wood, probably from the strong smell it exhales. In like manner, bees never build in a hive made of it. Meat, also, placed in a fresh cedar box, is said to acquire a peculiar flavour. One of the principal purposes for which the cedar is applied is, for splitting into shingles to cover houses. These are very durable, and usually last for fifteen years; though they may be preserved much longer by giving

them an occasional coat of oil paint, or smearing them over with a composition of lime, molasses, and salt. I may here remark, that trees grown in the forests are the best adapted for splitting into shingles; for, in exposed situations, the stem is generally twisted, and the woody fibres are seldom straight, from the many branches which pass through them. This kind of cedar is seldom employed in ship-building: sometimes, however, the trunk of a large tree is hollowed out into a canoe. This is easily done, as the wood is soft, and is cut out with great facility: the vessel itself is light, and carries a great weight. An amber-coloured gum, resembling gum arabic in its properties, may be obtained in considerable quantities by making incisions in the bark. This cedar grows readily from seed or cuttings; and even a fresh post, driven into the ground, readily takes root." (p. 175.)

Swietènia Mahágoni, the mahogany tree. The old Jamaica mahogany is still considered superior to any that can be procured from any other country. "It was formerly so plentiful as to be applied to the commonest purposes, such as planks, boards, shingles, &c.; now, however, although it is by no means scarce, we employ inferior woods on such occasions."

Vìtis vinífera, the common grape, is very generally cultivated. It thrives best near the sea shore, producing fruit in considerable abundance, and of a very good quality.

Guaìacum *officinàle*, the lignum vitæ tree, seldom grows higher than 12 ft. The centre of the wood is of an obscure green, and is the part which contains the larger proportion of resin. The sap wood is yellowish, and contains very little resin. The gum guaiacum is procured by incisions in the bark and sap wood. "It may also be procured by sawing the wood into billets, and boring a hole longitudinally through them; so that, when one end of the billet is laid on the fire, the gum flows readily from the other, and is collected in a calabash, or gourd. It may also be obtained by boiling the chips, or raspings, in salt water, when the gum will separate from the wood, and rise to the surface." (p. 188.)

Mangífera índica, the common mango, although but of recent introduction, is now the most common of the fruit trees of Jamaica. Ten varieties are in cultivation, of which the papaw mango, the yellow kidney-shaped, and the green kidney-shaped, are the best; and their fruit is esteemed by many as not inferior to the pine-apple. The tree is raised from seed; all attempts at grafting having failed, from the quantity of gum resin with which the bark abounds. "In order to obtain a good variety, the only plan is to employ the seed of the desired sort; although this is attended with uncertainty." ? Cuttings or layers.

U`lex europæ`a, the common furze, is naturalised on high

mountains, flowering throughout the year. The broom, though it has also been introduced, has not succeeded so well as the furze; and Dr. Macfadyen never observed it in blossom or fruit.

A*rachis hypogæ`a*, the American earth nut, is cultivated, and found to be exceedingly useful for its seeds; which are parched, and eaten as an article of food, and placed in the dessert as a substitute for the almond, the pistachia, and other nuts. In South Carolina, they are roasted, ground, and boiled, and make a very good substitute for chocolate.

Tamarindus *occidentàlis*, the West India tamarind. A lofty spreading tree, common in the plains, in rich deep soil. The pulp of the pods is usually packed in small kegs, between layers of sugar, and hot syrup is poured over the whole. The East India tamarinds are preserved without sugar, being merely dried in the sun when they are intended to be exported from one part of the Archipelago to another; but they are cured in salt when they are to be sent to Europe. "It is evident," says Dr. Macfadyen, "that the East India tamarinds, from the method in which they are preserved, must be the best adapted for medicinal purposes."

We have made these extracts to show the interesting information which may be procured from this work respecting plants already introduced into England, and cultivated in our stoves; independently altogether of what relates to plants not yet introduced.

On the completion of the work, Dr. Macfadyen proposes to commence a series of illustrations of such plants as are new, or may not have been previously figured, which will be a valuable addition to pictorial botany. We would suggest, also, the preparation of a short article containing what may be called the geographical, physical, and economical generalisations of the Jamaica flora. For example, 1. the indigenous vegetable products of the different rocks and soils; 2. the flora of different elevations, dividing these into zones, corresponding with the zones of latitude; 3. the plants used in the rural and domestic economy of the country, including the arts and manufactures, medicine, &c.

ART. III. *The New Botanist's Guide to the Localities of the rarer Plants of Britain.* By Hewett Cottrel Watson. Vol. II. Scotland and the adjacent Isles. 674 pages.

THE first volume of this work was noticed in our preceding Volume (p. 154.). This second volume completes the work as far as respects the flowering plants of Britain; and the author refers to Mr. Francis's *Analysis of the British Ferns and allied Orders* for the localities of that division of British plants. *The*

New Botanist's Guide, now completed, has, doubtless, been to the author a work of immense labour, and very considerable expense; but he appears to be enthusiastically devoted to the subject, and, as the following notice will show, is generous and liberal to a degree rarely to be met with.

"NOTICE. — The above works [*Remarks on the Geographical Distribution of British Plants, the New Botanist's Guide*, and *Statistics of Phrenology*] are calculated to be useful to persons devoting attention to the departments of science to which they relate; but, being works not at all of general interest, they will seldom be found in public libraries, and thus cannot be consulted by persons not in possession of copies. The consideration of this circumstance induces the author to express his willingness to present copies to any individuals really interested in the subjects to which the works relate, but who may not find it convenient to purchase them from the booksellers. His only stipulation is, that any one desirous of procuring copies in this way shall be known to himself, or to some of the correspondents mentioned as having supplied information to the author, connected with the contents of the works."

The New Botanist's Guide, whether to the gardener or the amateur, will be of great value in three different ways: as a substitute for local floras, which, being works of very limited sale, are generally very expensive; as indicating the plants worth looking for in any given locality; and as affording an assistance, to a certain extent, in even determining the names of indigenous plants.

In the preface to this work are some general observations on the ultimate tendency of botany, which we shall, perhaps, quote on some future occasion; contenting ourselves at present with the following sentence: —

"Experiments and accidental observations, with some aid from chemistry and mechanical inventions, have enabled practical farmers greatly to augment and improve the vegetable produce of Britain: but it is hardly saying too much, to suggest that a scientific knowledge of the laws of vegetation, though it will be slowly acquired, must place a future race of cultivators as much above the present workmen, in skill and power, as the scientific chemist of to-day is superior to the cooks and the drug venders, who were the chemists, empirically, centuries ago."

ART. IV. *An Essay on the Nature, the End, and the Means of Imitation in the Fine Arts.* Translated from the French of M. Quatremère de Quincy, by J. C. Kent, Esq. 8vo. London, 1837.

WE feel that we have been guilty of a certain degree of injustice to Mr. Kent in not having sooner noticed this work in this Magazine. We have not, however, been unmindful of it in the *Arch. Mag.*; and we are happy to state that it has been favourably received by the literary world in general. The title-page does not seem to indicate a work that will be at all useful to gardeners; nevertheless, it contains the rudiments of the only satisfactory theory of gardening, as an art of imagination, that

has yet appeared; and we freely acknowledge ourselves more indebted to it than to all the other works on landscape-gardening, or the fine arts, put together.

The fundamental principle laid down by Quatremère de Quincy is, that man is an imitative animal; and that the productions of the fine arts, or arts of imagination, differ from those of the common arts, or of those which do not address themselves to the imagination, in imitating things in a different medium from that in which they actually exist in nature. Thus, the imitation of a landscape by a painter on canvass is a work of imagination, and the production ranks as one of the fine arts; while to imitate it in the actual materials of nature, such as ground, wood, water, rocks, &c., requires no imagination, but mere mechanical imitation; and, consequently, the subject produced has no more claim to be considered as belonging to the fine arts, than an artificial flower, made of silk, wax, or paper; and so correctly coloured as to be almost mistaken for nature.

What, then, becomes of modern landscape-gardening as a fine art, and of the expressions of Alison and others, that it is an art as superior to landscape-painting, as the original is to an imitation? According to Quatremère de Quincy, modern landscape-gardening is not a fine art at all. Its avowed object being an imitation of nature, in nature's own materials, it attempts nothing more than the repetition of what already exists; whereas, to become a fine art, the object imitated must be imitated by the artist in a different material, or in some medium different from that in which it is presented by nature, so as to produce something which did not before exist. The modern style of landscape-gardening, therefore, has even less pretensions to being a fine art, as Quatremère de Quincy very justly observes, than the ancient or geometrical style; for in this latter style nature was not imitated in a fac-simile manner. Ground, wood, and water, in the ancient style, all underwent a kind of remodeling, which removed its productions farther from nature than those of the modern style; and thus, to a certain extent, rendered it a fine art. This doctrine will, no doubt, shock a number of persons who have been long accustomed to heap every epithet of abuse on the ancient style, and to bestow unlimited praise on the modern manner; but Quatremère de Quincy's theory is not on this account the less just. The truth is, the applause which has been bestowed on the modern style is not so much owing to any intrinsic merit that it possesses in itself, as it is to the contrast between the scenes which are produced by it, and those of the surrounding country. It has changed places with the geometrical style in England; because the entire country is now covered with straight hedges and rows of trees, and may, consequently, be considered as laid out geometrically; while natural

scenery has become as rare as enclosed fields, and trees planted in rows, were in former times.

The modern, or natural, style could not have existed in gardens in an age and in a country where the general scenery was left in its natural wildness; because there could not then have been any other kind of scenery to contrast with it.

No scenery or object of any kind can be prized by human nature without reference to some ideas associated in the mind. Natural scenery, however beautiful, where it is the only scenery of a country, can never be admired by the inhabitants as such, without reference to some ideas already existing in their minds, and which they may have obtained from reading, or from studying the art of sketching landscapes. A country wholly composed of natural scenery, can never exhibit those great contrasts produced by art, which are found in a country where natural scenery prevails, and artificial scenery is only occasionally met with; or in one where artificial scenery abounds, and natural scenery is of rare occurrence. The scenery which is comparatively rare, in either case, whether natural or artificial, will be considered as the most beautiful, and as indicating wealth and refinement in those who possess it. It thus appears that the claim both of the ancient and modern styles to be reckoned fine arts is entirely relative; not depending on any quality of their own, but on their scarcity or abundance relatively to the general surface of the country in which they exist.

It has been observed that, of the two styles, that which has the greatest claim to be considered a fine art is the geometric manner; but the natural style has also certain claims, which it would be unfair not to notice. The chief of these is the power of selection possessed by the artist, who may imitate scenery of a kind not to be met with in a given locality, and hence, to a certain extent, produce landscapes which could not be confounded with the common landscapes of the country. If he carried this so far as to introduce only exotic trees and shrubs, and, at the same time, to mark every part of the scenes he produced by art, in such a manner as that, while they resembled nature, they could never be mistaken for fortuitous productions, he will have gone as far towards rendering landscape-gardening a fine art as the nature of things renders it possible to do.

Before our readers decide as to which of these styles has the greatest claim to be considered as a fine art, we request them to reflect on the influence of novelty and fashion, and to consider how very few persons there are who judge of any object of taste whatever, with reference to any other quality than the latter. It is commonly objected to the ancient style, that it is unnatural; by which appears to be meant that it is not like wild nature; but, with the same propriety, all clothing might be de-

scribed as unnatural. The truth is, that the ancient, or geometric, style is the more natural of the two; being that to which mankind first resort when emerging from barbarism into civilisation. Whoever will reflect on the two styles without prejudice, must allow that, in any given space, the geometrical style is capable of producing a more grand and magnificent effect than the natural style; while, on the other hand, in the same space, the natural style will produce more grace and variety. An ancient straight avenue bordered by rows of trees, and a winding approach-road through a modern park, may be referred to as familiar examples, characteristic of the difference between the two styles.

The study of Quatremère de Quincy's work, now for the first time exhibited in an English dress (and which we strongly recommend to the perusal of every gardener having pretensions to the laying out of grounds), will, we trust, lead to more liberal and enlightened ideas on the different styles of landscape-gardening, and obtain for the much desired ancient style the degree of approbation which it merits.

Art. V. *The Parterre; or, whole Art of forming Flower-Gardens.* By C. F. Ferris, Esq. 12mo, 48 pages, and 11 lithographed plates.

In the address, the author says, "The titlepage to this little book will sufficiently explain the intention of this publication." If the term were not too harsh, we should say that the "intention" of this book appears to be to deceive the public; for, so far from this publication exhibiting the whole art of forming flower-gardens, it only furnishes plans for one description of them, viz. the French parterre. Authors, however, are not always to be blamed for the titles to their books; for, after the MS. is sold to the publisher, the latter sometimes adopts the title which he thinks best calculated to sell the work. Whether this be the case or not, in the present instance, we have not the least idea, not being personally acquainted with either the author or the publisher.

The work before us might fairly have been entitled "Designs for Flower-Gardens in the French Manner; showing how to combine Embroideries, Cut-works, and Turf-works." To be "complete," there ought to have been designs in the English manner; and, what is even of more importance than designs, the mode of planting and managing each kind of parterre ought to have been pointed out. The French parterres require to be planted in a totally different manner from the English parterres: they are not intended for the display of flowers, but for the display of curiously traced lines, different curvilinear plots or beds covered with smooth green turf (which, in the days of these parterres, was rare both in France and Italy, and, consequently,

highly prized in a parterre), or, with gravel, sand, or powdered earthy materials of different colours. The three component parts of these parterres were turf beds, dug beds bordered with box, and embroidered work, consisting of a kind of scroll of box edgings, double, single, or expanding so as to include sometimes a small portion of naked surface. It was only in the dug beds that plants or flowers of any kind could be introduced; and there were never more than a single row along the centre of the bed, at regular distances. The kinds planted were of low growth, and kept small, neat, and symmetrical, by constant trimming. Here and there a shrub was planted, such as a box tree, or, in Italy, a cypress or an ilex; and these were always kept low, and regularly clipped into balls, cones, or pyramids, so as never to interfere with the grand object in view, viz. that of showing the entire figure of the parterre at once, as a complete and harmonious whole, in the general style of art denominated that of Louis XIV. With respect to the embroidery work, very few persons, who have never been out of England, and, who have never seen it, or rather the remains of it, in the grounds of old French châteaux, or in Italy, can have a distinct idea of what it is. The only correct example that we know, on a considerable scale, in England, is at Holland House; where, however, the effect is much injured by some large trees which are growing in it. A French parterre, to have its full effect, ought to be surrounded by a hedge, or, what is better, a phalanx of hedges; say one of box, 3 ft. high; another, a few feet distance from it, of yew, 5 ft. or 6 ft. high; and, a few feet beyond that, one of hornbeam, varying in height from 10 ft. to 30 ft., according to the dimensions of the parterre. In the interior, there ought not to be a single plant displaying its natural form: all should be subjected to the line, the rule, the shears, and the scythe. We do not condemn this kind of parterre: far from it, we should like to see one in the grounds of every extensive residence, where, in spite of all that could be said against it, it would delight by its contrast with the modern English parterre, and in recalling the ideas of former times. In so far as Mr. Ferris has given plans for the French parterre, he may be considered as having done good; but not to have shown the characteristic beauties of these designs, and pointed out the necessity of placing them in secluded situations, and surrounding them by hedges in English pleasure-ground scenery, is a defect which will, we fear, render his plans of very little use; and, indeed, if any one undertakes to carry them into execution who does not understand the scope and spirit of the French parterre, the plans will do mischief, rather than good.

The genius of the English parterre is totally different from that of the French parterre; for, while that of the latter is to display forms and lines, the former aims at variety and brilliancy

of colouring by means of flowers, without much regard to forms, and with very little regard to lines. The English parterre may either have a groundwork of turf or of gravel; that is to say, the spaces between the beds may be of either of these materials. The forms of the beds, and their relative position, ought to be such as to produce a symmetrical whole; on which subject we have already said so much in different parts of this Magazine, and lately in the *Suburban Gardener*, that we shall not farther insist on it here. The French parterre requires great skill in laying it out; after which, the business of keeping it in perfect order is quite mechanical, and might be done by a person who does not know the culture, or the name, of a single plant or flower. On the other hand, the English parterre is easily laid out, a proper plan being first given; but the keeping it properly planted, so that every part of it may be covered with flowers during the floral months, requires a very considerable knowledge of flowering plants, annual, perennial, and bulbs; and a degree of constant and assiduous attention during, we may say, every day throughout the summer, that few persons have any idea of.

With respect to the design of English parterres, there are only two or three in the immediate environs of London that we could refer to, as being tolerably perfect. Flower-gardens, or English parterres, are generally composed of beds unconnected either by shape or by position; or are discordant, from some of the beds being disproportionately large, and others disproportionately small. Sometimes, also, the parterre is interspersed with trees; which, after they grow large, not only injure its effect, but render it impossible to cultivate flowers in it to perfection. All these evils, however, may be wonderfully mitigated by the manner in which the beds are planted; because, by using high-growing plants in some places, and low-growing ones in others, and, under the trees, those that love the shade, the appearance of connexion may be obtained where it does not really exist, and thus the effect of a whole produced, at least from several points of view. But we have now said enough to show that the *whole art of forming flower-gardens* is not quite so trifling a matter as would appear from Mr. Ferris's "little book;" and that may suffice for the present.

Art. VI. *The Flower-Garden: including Directions for the Arrangement and Cultivation of all Garden Flowers; the Management of the Green-house, Hot-house, and Stove; with selected Lists of the most beautiful annual, biennial, perennial, and exotic Flowering Plants.* Parts I. to VI. Small 8vo, plates. 1837.

This work, like the preceding one, is a failure, but in a different way. Its compiler has not shown any want of industry

and appears to have done his best to fulfil the promise of the title; but he has failed for want of clear ideas, and practical knowledge of the subject on which he has written, and from a controversial ill-natured spirit.

The work commences with an account of the different styles of laying out flower-gardens; and gives what is intended as a description of the Italian, the French, the Dutch, and the English styles. We shall extract the whole of the article on the French style, in order that our readers may compare it with what we have said on this style in the preceding review; and judge for themselves how far we are justified in stating that the author is without either clear ideas, or practical knowledge on the subject of flower-gardens: —

"The French partially adopt the Italian style close to their châteaux and houses; and, beyond the terraces, lay out parterres, sometimes in very complicated figures. 'There is nothing,' says M. Chomel, 'more ingenious belonging to a garden, than the several ways of marking different figures in a work of this nature, especially where the design happens to be well contrived and executed. As for plain parterres, there are few gardeners so ignorant but they know how to mark them out; and there is, indeed, so great a variety of other parterres, which are embroidered, or partly cut-work, with borders, grass, and the like, that there would be no end of enumerating them, so luxuriant have people's fancies been in things of this kind. It may be said, in general, that the breadth of parterres ought to be equal, or even larger, than the outside of the house; and, as to length, it ought to be so contrived that all the compartments may be seen from the house.'

"It is necessary, however, to remark that, though this was and is a common style in France, many of the gardens are laid out in the more modern English styles, more particularly in the northern parts of the kingdom; and several English gardeners have been employed to lay out the higher class of gardens.

"The celebrated Evelyn, who visited France in the beginning of the reign of Louis XIV., gives distinct descriptions of the most remarkable gardens near Paris at that period.

"Of the Tuileries, he says, the garden is 'rarely contrived for privacy, shade, or company, by groves, plantations of tall trees, especially that in the middle, being of elms, and another of mulberries. There is a labyrinth of cypress, noble hedges of pomegranates, fountains, fish-ponds, and an aviary. There is an artificial echo, redoubling the words distinctly, and is never without some fair nymph singing to it. This being at the bottom of the garden, we are let into another, which, being kept with all imaginable accurateness, as to the orangery, precious shrubs, and rare fruits, seemed a paradise.'

"In 1823, Neill says, the flowers in this garden were few in species, but planted in copious profusion; the object being to keep the parterres gay with brilliant blossoms of various colours. He particularly remarked asters of many hues, French marigolds, balsams, zinnias, marvel of Peru; and he was told that many hundred specimens of geraniums were annually planted in the borders. The labyrinth of cypress and hedges of pomegranate mentioned by Evelyn have disappeared. From there being little coal smoke at Paris, the plants thrive as well almost as in the open country.

"At St. Cloud, Evelyn says, the Archbishop of Paris has a garden 'newly watered and furnished with statues, fountains, and groves: the walks are very fine; the fountain of Laocoon is in a large square pool, throwing the water near forty feet high, and having about it a multitude of statues and basins, and is a surprising object; but nothing is more esteemed than the cascade, falling from the great steps into the lowest and longest walk from Mount

Parnassus, which consists of a grotto, or shell-house, on the summit of the hill, wherein are divers contrivances and water-works to greet the spectators.'

" Of Cardinal Richelieu's gardens, at Ruelle, he says, they are so magnificent, ' that I doubt whether Italy has any exceeding them for varieties of pleasure. The garden nearest the pavilion is a parterre; having, in the midst, divers brass statues perpetually spouting water into an ample basin, with other figures of the same metal; but what is most admirable is the vast enclosures, and a variety of ground in the large garden containing vineyards, cornfields, meadows, groves (whereof one is of perennial greens), and walks of vast lengths, so accurately kept and cultivated, that nothing can be more agreeable. Here are also fountains that cast water to a great height; and large ponds, two of which have islands, for harbour of fowls, of which there is great store. One of these islands has a receptacle for them, built of vast pieces of rock, near fifty feet high, grown over with moss, ivy, &c., shaded, at a competent distance, with tall trees: in this the fowls lay and breed. We then saw a large and very rare grotto of shell-work, in the shape of satyrs, and other wild fancies. At going out, two extravagant musketeers shot us with a stream of water from their musket barrels.'

" Of the gardens of the Luxembourg, he says, ' The parterre is, indeed, of box, but so rarely designed and accurately cut short, that the embroidery makes a wonderful effect to the lodgings which front it. The walks are exactly fair, long, and variously descending; and so justly planted with limes, elms, and other trees, that nothing can be more delicious, especially that of the hornbeam hedge, which, being high and stately, bursts full on the fountain.' And Mr. Neill says, these are adorned with many fine orange trees, statuary ornaments, and a large circular piece of water, which adds to the embellishment. The summer orangery is adjoining; and statues and vases of marble, placed at intervals, encircle both. Geraniums, in pots, are placed in the vases, so that the pots are hid or disguised, the plant appearing to grow in an elegant vase, and its foliage and flowers are directly contrasted with the white marble. The collection of rose trees is extensive, and planted in formal squares, like a London sale nursery."

This is, no doubt, pleasant enough reading; but will it give to the reader, whether an amateur or a practical gardener, any idea of the mode of laying out and planting a French parterre? Will it, to use the language of the author's prospectus, " explain, in language clear and intelligible to all capacities, the principles of taste which ought to guide the amateur or professional gardener in laying out and planting his grounds " in the French style? A writer who is master of his subject does not require many words to convey its characteristic features to the mind of another; and, had the author really known the points which constitute the difference between a French flower-garden and every other, he would, doubtless, have stated them. Perhaps we shall be told that he has given a plan to illustrate the French style; but this plan, which is a copy from Le Blond (whose work we have now before us), and so bad a copy that it does not distinguish turf from dug beds, is not accompanied by a single word of description; and, indeed, had the compiler given Le Blond's description, it would have shown how very unsuitable the plan made choice of is for such a publication as the *Flower-Garden.* Le Blond speaks of his design as one of the most magnificent parterres that can be executed, and only to be carried into effect in a large square space, &c. Besides this

plan, a perspective view is given of a French garden, in which, however, there is no parterre. It is partly copied from a plate of Le Rouge, *Recueil*, &c., and partly invention. Literally, it consists of three straight hedges cut into arcades, with one hedge of arcades placed at right angles to them; and twelve parallelogram beds, with a number of statues, vases, and figures which might be introduced into any garden whatever.

The attempt to give an idea of the Italian garden is exactly of the same kind as that intended to describe the French garden; and it is quite amusing to observe the two woodcuts that are given to illustrate it. One of these is a view of the Isola Bella; and the other is a composition. In the last are brought together the pheasantry designed by Repton for the palace at Brighton; an Indian tank and fountain, also designed by Repton for the same palace; the *gloriette* in the park at Schönbrunn; and various objects, which have no more to do with an Italian garden, than they have with any other. The mistake in the compilation of this view of a garden consists in its being filled with ornaments common to any style, instead of exhibiting those features of the Italian style which are characteristic of it, and independent of any ornament.

It would be easy to prove that all that the author has written respecting the Dutch and the English styles is equally insufficient to effect the object of the book, as already quoted from the prospectus; but we have done enough, we trust, to prove our first proposition.

By controversial spirit, we allude to certain pages occupied with discussions which took place in the *Quarterly Journal of Agriculture*, respecting the excrementitious secretions of plants; and, by ill-nature, we allude to a spirit which manifests itself in many pages of the work, of the author's disposition to find fault where he can. It is a rule with us never to say anything in the review of a book that we should shrink from repeating in the presence of the author. In the present case, we should have said a great deal more; but that, among other reasons, we dislike the idea of decrying any work; and more especially one which, considering the decorations with which it is accompanied, is cheap. Every number of the work is ornamented with one or more groups of flowers, printed in colours by the very ingenious process invented by Mr. Baxter, and which will probably effect a great improvement in all books requiring coloured illustrations.

ART. VII. *Catalogue of Works on Gardening, Agriculture, Botany, Rural Architecture, &c., lately published, with some Account of those considered the more interesting.*

A SMALL *Edition of English Botany; containing the Plants of*

Great Britain, arranged according to the Linnæan Method, and briefly described. Nos. 193. and 194., November. Price 2*s.*

Figures and Descriptions of the Genera of British Flowering Plants, with the Scientific and English Names, Linnæan Class and Order, Natural Order, Generic and Specific Characters, References to the most popular Botanical Works, Localities, Time of flowering, and Dissections, showing the Essential Characters. By William Baxter, F.H.S., A.L., and M.B.S., &c., Curator of the Botanic Garden, Oxford. No. 64., November. Coloured, 1*s.* 6*d.*; plain, 1*s.*

These works continue to go on in the same spirited manner as before. A considerable number of species or varieties, or of varieties new to the British flora, are introduced in Mr. Sowerby's work, on the authority of eminent British botanists; and, in Mr. Baxter's number for November, Claytò*nia a*lsinöìdes is figured as an English plant, on the authority of Mr. Paxton, who found it " in an elevated part of a large plantation bordering Chatsworth Park, unquestionably wild." We need hardly repeat our strong recommendation of these works to all who wish to know anything of indigenous botany.

Icones Plantarum; or, Figures, with brief Descriptive Characters and Remarks, of new or rare Plants, selected from the Author's Herbarium. By Sir William Jackson Hooker, K.H., LL.D., F.R.A., and L.S., &c., and Regius Professor of Botany in the University of Glasgow. Parts I to IV. Price 14*s.* each.

This work being now completed, agreeably to the prospectus published in our last, p. 507., we have only again strongly to recommend it.

The Gardener's Gazette, a Weekly Journal of Science, Literature, and General News. London. Weekly. 5*d.*

The idea of publishing a *Gardener's Gazette* is a good one: it forms an exceedingly convenient medium for the publication of the accounts of the provincial horticultural and floricultural societies, and for the advertisements of nurserymen, florists, and others connected with gardening. We must, however, complain of the editor for filling his columns, and sometimes entire pages, with articles from this Magazine; sometimes of great length, as was the case of our article on the truffle, which was divided into three portions, published in three different gazettes, and only acknowledged at the end of the last. The editor is perfectly welcome to abuse us as much as he chooses, if he thinks it will be of any advantage to him to do so; but we must protest against his making use of our property to the extent which he has done. We appeal to his sense of justice and honour, whether it is fair to do this, and how he would like it if he were placed in our situation.

The Magazine of Domestic Economy. In monthly 8vo numbers, 1. to 29. Price 6*d.* each. London.

This is an exceedingly useful periodical, which deserves to be extensively circulated. The only thing which surprises us respecting it is, that there is not a greater number of original correspondents; but this is to be accounted for from there being no editor's name. A magazine, where the articles it contains stand on their own intrinsic merits, may gain the confidence of the public under anonymous editorship; but this is much less likely to be the case where the object is the collection and dissemination of matters of fact, not so much from books as from living persons.

On the Varieties, Properties, and Classification of Wheat. By John Le Couteur, Esq., Captain H. P. late 104th Regiment, Colonel 1st Regiment Royal Jersey Militia, Aide de Camp to the King. Jersey, 1836. 8vo, 122 pages, and 5 plates. Shearsmith, London.

The importance of selecting varieties suitable for different soils and climates, of the principal plants in cultivation in the garden and farm, may be said to be just beginning to be understood; and it ought not to be forgotten that one of the first persons to call attention to this subject was Mr. David Bishop, in his *Causal Botany*, pulished in 1829. (See Vol. V. p. 455., and Vol. VI. p. 99.) Colonel Le Couteur's attention was directed to the subject in 1831, when "he accidentally saw, with astonishment and pleasure, about 80 distinct sorts of wheat growing in a nursery garden in Jersey; some 7 ft. high, some only 4 ft.; the ears of some 3 in. long, others 6 in.

"Professor La Gasca, whose they were, happened to join me; and, though a stranger, he politely explained their nature to me.

"I requested him to visit my crops the following day. I considered them as pure, at least as unmixed, as those of my neighbours; when, to my dismay, he drew from three fields three and twenty sorts; some white wheat, some red, some liver-coloured; some spring wheat; some dead ripe, the corn shaking out; some ripe, some half so; some in a milky state, and some green.

"I reflected on the subject, and immediately became convinced that no crop, in that state, could either produce the greatest weight of corn, give the largest quantity of flour, or make the best or lightest bread, such as would be produced from a field in an equal and perfect state of ripeness.

"I directly conceived a plan to endeavour practically to ascertain the relative properties of the best and most productive sorts of wheat. I requested Professor La Gasca to show me those which he considered the best. He pointed out fourteen sorts: these I grew with extreme care, in the mode that will be described hereafter.

"The great first principle I wish to advocate is, the proper adaptation of varieties of wheat to the various soils and climates; since it is the suitableness of each sort to each soil that will enable the farmer to pay the rent of his land, by sowing one variety where he would be unable to do so by attempting to grow another of a seemingly better sort."

In the 1st chapter, "on the Varieties of Wheat," the author observes that, though much has been written on the subject,—

"No writer has yet called the attention of the agricultural world to the cultivation of pure sorts, originating from one single grain. It is contended that this has been the root of all evil."

"The learned Professor had been theoretically employed in the classification and scientific examination of wheat as a plant, in the research and consideration of all its varieties; but it had escaped him to consider it in its properties with relation to the food of man. This practical view the author took of it, and he determined to attempt to discover which were the most farinaceous and productive varieties, by comparing their characters and produce, one with another."

The great value of Colonel Le Couteur's conclusions consists in his having combined the consideration of quality, as well as quantity, in his researches; and accordingly, in the tabular views which he has given of his experiments, some varieties are proved to be remarkable for the length, strength, and weight of their straw; others for the weight of their grain, and the number of loaves that may be made from a bushel of the flour; some for the colour of the grain, &c.; some varieties are tender and late, and others hardy and early, and so on. But we must refer the agriculturist to Colonel Le Couteur's pamphlet. From Mr. Lawson of Edinburgh, M. Vilmorin of Paris, or Mr. Charlwood of London, we believe that seeds of the best varieties may be procured in moderate quantities.

We have said enough, we trust, to show that Colonel Le Couteur has rendered a very important service to the growers of wheat, not only in Britain, but in every part of the world, where that grain is cultivated; and we only wish that British farmers had sufficient acuteness and nicety of calculation, to benefit from the facts which he has elicited by experiment. In the mean time, we trust that Colonel Le Couteur will prosecute his researches, and that other scientific agriculturists will take up the subject as he has done, in different parts of the country.

The following extract from a letter lately received from Colonel Le Couteur will give an idea of the nicety of calculation that is requisite to the thorough understanding of the importance of the subject. We introduce it not only because we know that a number of agriculturists read our Magazine, as well as gardeners, but also because we think it will teach the young gardener to apply this kind of calculation to subjects connected with his profession: for example, to the weight and quality of vegetables cut green, and to roots, fruits, &c.

"It is surprising how seriously the seasons affect wheat, though in the best soils, and those soils under careful preparation. No. 1. (Jersey Dantzic), of which, in 1833, 27 grains weighed a scruple, this year required 33 to make that weight. No. 2. (Small Round) is still smaller: in 1833, 28 grains weighed 1 scruple, but in 1837, it required 40. No. 5, in 1833, required 20 grains for 1 scruple, and in 1837, 30 grains. No. 8, in 1833, required 23 grains to make 1 scruple, but in 1836, 24 grains. The Triticum æstivum var. Talavera bellevuensis is the only sort which remains at 19 grains to a scruple. This difference in the weight of grains to a given quantity, carried on to a bushel, next to a quarter, then to an acre, and lastly to the produce

of a great country, readily accounts for the astonishing difference of the value of crops in different seasons."

Col. Le Couteur has kindly sent us five samples of his best varieties, which we have divided equally, between Samuel Taylor, Esq., Whittingham, Stokeferry, Norfolk; Mr. Gorrie, Annat Gardens, near Errol, Perth; and Mr. Laird, nurseryman, Dundee.

Chemistry of Nature, designed as a popular Exposition of the Chemical Constitution and Relations of Natural Objects, and as a General Introduction to the Study of Chemical Science. By Hugo Reid, Lecturer on Chemistry to the Glasgow High School, and Glasgow Mechanics' Institute. 8vo, 312 pages.

This is just such a book as we have long wished to see published; an introduction to chemistry adapted to general readers, who have not the means of performing chemical experiments, or who do not wish to do so. The following extract from the preface will give such an idea of this little book as will, we trust, strongly recommend it to every young gardener:—

"This Work is not designed to convey instructions for performing experiments, but as a book *to be read* by those who may desire some general knowledge of the nature of chemical phenomena, the method of chemical research, and the manner in which chemical experiments are commonly made; and who may feel an interest in studying those natural phenomena which consist in chemical actions. Being convinced that a complete knowledge of the subject is always desired, even by those who read only for general information, those topics which the volume embraces are entered into very fully, so that a satisfactory knowledge of them may be obtained.

"The author hopes that, from the explanatory manner in which the subjects are treated, and the interest which always accompanies descriptions of the *how and why* in natural phenomena, the work may be useful as an introduction to the study of chemistry, even for those who intend to pursue the science more fully afterwards. It is of great advantage, before entering on any study, to have a general notion of its scope and bearing, and of the terms employed.

"These are two striking features in the state of science in modern times; the great amount of scientific knowledge which has been acquired, and the adaptation of that knowledge so as to be accessible to all who possess the simple qualification of being able to read. Mankind have not been slow to avail themselves of the opportunities thus presented to them; and scientific information has been found so useful, so agreeable, and now so essential, from the very circumstance of its universal diffusion, that it is beginning to be considered a necessary part of a general education."

History and Topography of the Isle of Axholme. By the Rev. W. B. Stonehouse, M.A. Parts I. and II. 4to, plates and maps.

This work is noticed here on account of the very excellent description which it contains, illustrated by two plans of the process of warping (p. 36. to 44.) We are not aware of there being so full a description of the process given in any other work. The account of Vermuyden's drainage is also very interesting; and there is an excellent description (p. 68. and 69.) of a decoy.

Elliotson's Hobart Town Almanack, and Ross's Van Diemen's Land Annual, for 1837. 8vo, two maps and a vignette. Hobart Town.

We have great pleasure in receiving any book from Van Diemen's Land, that being the country and climate which we prefer to all others, as coming the nearest to the finest parts of the climate of England. In the *Almanack*, we are happy to observe an account of various useful institutions established in Hobart Town, such as schools, a mechanics' institution, a book society, an inspector of live stock and slaughter-houses, a board of roads and bridges, &c. The *Annual* contains a general view of the past and present state of Van Diemen's Land, in which is included an excursion to Port Arthur, the perusal of which will be found highly interesting; though, we must acknowledge, not very inviting. The following paragraph stands at the end of the *Almanack* for November: —

"The progress of vegetation is now very rapid: avail yourself of occasional showers to plant out cabbages, &c. Young peas, potatoes, gooseberries, and strawberries are now in season. If anything can call forth the exertions of the the husbandman, and render his rural occupation delightful, it is the joyous prospect which his fields and herds now afford him."

In December, hay harvest is general throughout the Island; and towards the end of the month, barley harvest begins. July is the principal winter month, respecting which it is said, —

"The average temperature of this month is as low as 40° of Fahrenheit; the weather, however, though occasionally wet, is, on the whole, serene and pleasant, affording every opportunity to carry on the operations of the farm by plough and otherwise."

Of May it is said, —

"This and the ensuing month may be considered as the depth of winter in Van Diemen's Land; for, before July has expired and August commenced, various indications of the approaching spring are put forth. Vegetation, except in the evergreen trees and shrubs of the Island, is completely at a stand."

FRANCE.

Histoire Naturelle des Iles Canaries. Par MM. P. Barker-Webb, et Sabin Berthelot, Membres de plusieurs Académies et Sociétés savantes. Ouvrage publié sous les auspices de M. Guizot, Ministre de l'Instruction Publique. Large 4to and fol., plates. Paris.

This admirable work (in every respect a model of its kind) continues to maintain the same style of excellence with which it commenced. The 22d livraison, now before us, contains an interesting View of the Region of Heaths in the Valley of Palmar in Teneriffe; a View of the Village of Adexe, in which the palm and the dromedary are seen among the scenery; and figures of Wébb*ia* platysépala *Spach;* a new plant belonging to the order

Hypericíneæ, *Onònis longifòlia Willd*, a very beautiful species; and *Lòtus Broussonèt*ii Choisy. Seeds and dried specimens of these and many more fine plants will, we trust, be sent home by Dr. Lippold; who, according to the last accounts, will, early in the next spring, leave Madeira for the Canaries. The *Histoire Naturelle des Iles Canaries* is to be completed in 50 livraisons, which will be delivered to subscribers at 6 francs each, and the price raised considerably to non-subscribers.

GERMANY.

Allgemeine Gartenzeitung. Nos. 12. to 40.; from March 25. to October 27. 1837. Conducted by F. Otto, Royal Prussian Garden Director; and Dr. Dietrich, Teacher in the Garden Institution of Berlin.

The fifth year since this work commenced is now nearly completed. It consists chiefly of translations from the English botanical periodicals, but in part, also, of original matter; and, on the whole, we should think it is one of the most useful garden periodicals that ever has been published in Germany.

Verhandlungen des Vereins zur Beförderung des Gartenbaues in den Königlich Prussischen Staaten. Transactions of the Horticultural Society of Prussia, &c. Vol. XII. Part II. 4to. Berlin, 1837.

Verhandlungen des Vereins zur Beförderung des Garten und Felbaues, als Section der Frankfurtischen Gesellschaft zur Beförderung Nützlicher Kunste und deren Hulfswissenshaften, &c. Transactions of the Frankfort Society for the Advancement of Garden and Field Culture; being a Section of the Frankfort Institution for the Advancement of the Useful Arts and their subservient Sciences, &c. 4to. Part I. Frankfort, 1837.

The Frankfort Horticultural Society was established in 1835, and the present is the first part of their *Transactions*. This part contains several papers of considerable length; among which is a very copious account of the Mode of cultivating the Hyacinth at Haarlem; an abridgment of which, from the author's MS., was given in this Magazine some years back. There is a good article on the Culture of Ericas; a notice respecting the death of Douglas, which does great honour to M. Rinz, and to the Society, and which led to the very handsome subscription of the gardeners and amateurs of Frankfort, amounting to 15*l*. There is an article on the Flower-Beds of English Gardens, one on Amateurship, and a third on Landscape-Gardening; which articles we shall translate, and publish in this Magazine as soon as we can find room. Besides these articles, there are a number of very judicious selections from this Magazine, and, among these, our article on the Progress of Gardening during

the Year 1836, with some remarks and corrections, which we shall elsewhere make use of.

Sechtes Preiss-Verzeichniss der verschiedenen feinen Tafels Obstsorten, Gehölze fur Garten-Anlagen, Gewächshaus-Pflanzen, &c., fur 1837-8, *welche bei S. und J. Rinz, Kunst und Handels-Gärtner in Frankfurt am Main, zu haben sind:* that is, The Sixth priced Catalogue of Fruit Trees, Ornamental and Useful Plants, &c., propagated and sold by S. and J. Rinz, Nurserymen, Frankfort on the Maine. 8vo, pp. 31. Frankfort, 1837.

Verzeichniss der Grünhaus-Pflanzen des Freyherrn Carl von Hügel, No. IX. Catalogue of Green-house Plants, cultivated in the garden of Baron Hügel, at Hietzing, near Vienna; with the prices indicated at which they will be sold or exchanged. Pamph. 8vo, 46 pages. Vienna, 1837.

Art. VIII. *Literary Notices.*

Kollar's History of the Insects injurious to Gardeners and Farmers is translated, and will be put to press before this notice sees the light.

Essays on Natural History (in which the habits of various birds injurious to gardens are noticed), by Charles Waterton, Esq., will appear about Christmas.

The Rose Amateur's Guide, by T. Rivers, jun., including plans for rosariums, will shortly be put to press, and will, we have no doubt, prove an excellent work.

A Treatise on the Concentration of the Sun's Rays, as applied to Horticulture and Agriculture, by Robert Gauen, is in the press, and will shortly be published by subscription.

A botanical periodical, by Baron Hügel, somewhat in the manner of the *Botanical Register*, but with definite side-headings for geography, history, year of introduction, propagation, culture, &c., as in Willdenow's *Abbildung*, and Maund's *Botanist;* improvements which we have many years ago stated are greatly wanted for the *Botanical Register* and the *Botanical Magazine.*

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

What is Science? "Is it something," as Aristotle has it, "which we know," in contradistinction to art, "which is something which we do?" Does true science consist, as Bacon declares, in "the knowledge of facts?" Then statistics is a science. It possesses the five constituent elements of a science, as enumerated by the French ideologists; namely, Facts, Nomenclature, Systematic Classifica-

tion, Theory, and Method. "Science," says Sir John Herschel (*Treatise on Nat. Philos.* p. 18.), "is the knowledge of many, orderly and methodically digested and arranged, so as to become attainable by one." The knowledge of reasons and their conclusions constitutes abstract science; that of causes and their effects, and of the laws of nature, constitutes natural science. The inductive process of illation (inference) forms a science; the synthetic process of illation produces art: every art is, therefore, posterior to, and exists only in virtue of, its correlative, anterior science, of which it is the effect. Statistics, therefore, like other subjects of human thought, may be viewed both as a science and an art. Considered as a process of inference from particulars to generals, or from many to one, it is a science; and, considered as the application of general principles to individual cases, it is an art, precisely the same as any other subdivision of the natural and abstract sciences. Those who sneer at art as something very contemptible, should be reminded that every art is the legitimate offspring of a science; and that the principles of art are the result of scientific induction. Every rational art has reference to an *à priori* theory, a preconceived principle, obtained by reasoning scientifically from the particular to the general; or, as logicians phrase it, from the concrete to the abstract. If the march of intellect be a desirable march, it assuredly is more important to proceed securely, than rapidly, never forgetting the great Baconian maxim, "Hominum intellectui non plumæ addendæ, sed potius plumbum et pondera." (*Athenæum*, Nov. 26. 1836.)

Anomalous Structure in Dicotyledones. — M. Decaisne has presented to the Academy of Sciences a work on the family of the Lardizabàle*æ*, and some important observations on the anatomical structure of the wood of the genera Menispérmum and *A*ristolòchia. Dicotyledones are known at first sight by the concentric zones which are annually formed around the ligneous axis of the first year; and, at the same time that a layer of wood is formed, there is also a layer of bark; so that their number corresponds exactly with the age of the plant. Nevertheless, according to the experiments of M. Ducaisne, there are several modifications of this law, hitherto regarded as general, and of which he states the following:—

1. The wood of the menispermums differs from that of other dicotyledonous plants in having no concentric annual layers. The woody fibre remains simple, and is not divided in its length, as in other dicotyledones; but it increases in length by the annual formation of a new layer, without the first, and within the bark. The layer without each of the woody fibres ceases to grow after the first year of vegetation.

2. The aristolochias differ from the menispermums in many respects; for in some species (*A.* sìpho, &c.) there are annual concentric zones, and in others (*A.* labiòsa, *A.* Clematìtis) the woody fibre is divided by the interposition of imperfect cellular rays, converging between them towards the centre, in the manner of a fan. These two modifications according to the experiments cited, do not appear to depend upon differences in the climate or seasons.

3. The stem of the aristolochias has only one point of organisation, which is common to it and the menispermums; namely, the disposition of the bark, which is seen in the form of small fibres opposite to those of the wood; but the fibres of the bark appear to increase at the same time with those of the wood, since they are equal in number, and opposite.

4. In some menispermums (*C*issámpelos *Pareìra*, Cócculus *l*aurifòlius) new tissue, similar in appearance, but destitute of spiral vessels and bark, is seen at the end of several years, without the first, forming around them a concentric layer. This formation being often repeated gives the appearance of a number of layers. But each of them requires many years' growth, instead of only one. As soon as the new ligneous formation appears, the old woody fibre ceases to grow, and the cambium to form perfect wood. In this case, the bark not belonging to the circle first formed, instead of being at the circumference of the tree, as in all other dicotyledonous plants yet known, is in the centre, and near the pith.

5. The menispermums resemble other dicotyledones (of which they form a part) by the annual formation of a layer of cambium into wood; but differ in the woody fibre not being divided as they increase in length, and in the complete absence of the cortical body formed by the liber. (*L'E'cho*, Sept. 9. 1837.)

Transporting Plants and Seeds from Abroad.—The following extracts are from the instructions relative to this subject given by M. Mirbel to the expedition in the *Astrolabe:*—"Formerly, in long voyages, it was very difficult to preserve plants alive for any length of time. During the voyage, they were liable to perish from many circumstances; and, upon their arrival, it was necessary to pay a heavy duty, without any drawback. Now, however, by a sure and simple process, seeds and plants may be brought from the most distant countries, with the certainty of the greater number of them arriving safe. The mode recommended by the English gardener, Luschnath (?) is this:—He places in the bottom of a strong water-tight box a layer of clay reduced to a proper moist and soft consistency; and above this young ligneous plants with the leaves stripped off, laid horizontally side by side. He next spreads above these plants another layer of clay, similar to the first; and beats it well with a large wooden mallet, for the purpose of expelling the water and superfluous air, leaving to the plants only just as much space as they can fill. He continues to spread alternately a layer of plants and a layer of clay, until the box is quite full, taking care to beat properly every layer of clay; and, finally, the box is hermetically closed."

M. Fischer, director of the Imperial Botanic Garden at St. Petersburg, writes thus, in 1836:—"Some ligneous plants, packed according to the method of Luschnach (?), which have been sent from Rio Janeiro to St. Petersburg, have arrived there for the most part alive, after a voyage of more than five months; and others, which were packed in the ordinary manner, died."

This method is also applicable to seeds. They should be placed in layers between strata of clay, and kept at such a distance from each other, that, should any of them germinate during the voyage, which is not unfrequent, they might not injure one another. By this method, seeds, and a great many species of trees and shrubs, which are known to lose their germinative property in a short time, may be brought safely to Europe, and thrive there if properly treated. In the same box both seeds and plants may be packed at one time. (*L'E'cho du Monde Savant*, Aug. 1837.)

Every Bud, when it shoots sends down Roots under the Bark, as a seed does in the soil. "The Pterocárpus marsùpium, one of the most beautiful of the large trees of the East Indies, and which grows in the greatest perfection about Malacca, affording by its elegant wide-expanding boughs, and thick, spreading, pinnated leaves, a shade equally delightful with that of the far-famed tamarind tree, is readily propagated by cuttings of all sizes, even if planted after the pieces have been cut for many months, and appear quite dry, and fit only for the fire. I have witnessed some, of from 3 in. to 7 in. in diameter, and 10 ft. or 12 ft. long, come to be fine trees in a few years. While watching the transformation of the log into the tree, I have been able to trace the progress of the radicles from the buds, which began to shoot from the upper part of the stump a few days after it had been placed in the ground, and marked their progress till they reached the earth. By elevating the bark, minute fibres are seen to descend contemporaneously as the bud shoots into a branch. In a few weeks, these are seen to interlace each other. In less than two years, the living fibrous system is complete; and, in five years, no vestige of its log origin can be perceived. Its diameter and height are doubled, and the tree is, in all respects, as elegant and beautiful as if it had been produced from seed. These details are introduced, because I think they afford a clear explanation of the process of nature, which, with so little assistance, converts branches into trees, and will help to unfold those subsequent steps, by which the same process is so modified, that, instead of a full-formed beautiful tree, the bough is tortured into a grotesque dwarf." (*Hort. Trans.*, iv. p. 227.)

Carbon, Hydrogen, and Oxygen in different Kinds of Wood. — Two German chemists, M. Petersen and Schodler, have made elaborate experiments in order to ascertain the quantities of carbon, hydrogen, and oxygen contained in each species of wood. They have analysed 24 different kinds; and, after having dried them and reduced them to powder, they have taken 100 parts of each in weight, and found that the quantity of carbon in each does not vary more than from 48 to 50 per cent; the hydrogen, from $5\frac{1}{3}$ to nearly 6 per cent; and the oxygen, from $43\frac{1}{3}$ to $45\frac{1}{2}$ per cent. The proportions would be different in relation to volume. For instance, a cubic mètre of oak weighs 479 lb., while the same body of poplar weighs only 221 lb. (*Times*, Dec. 24. 1836.)

Effects of different Kinds of Salt on Plants. — The result of an experiment made by S. Florio, and given in detail in the *Repertorio d'Agricoltura* for 1836, is as follows: — "Common sea salt entirely prevented the germination of wheat and maize. With soda, some grains of wheat germinated, but produced very feeble plants; with potash, on the contrary, wheat and maize germinated freely, and produced beautiful plants. Sal ammoniac entirely destroyed all signs of vegetable life; and nitrate of potash only allowed some grains of wheat to germinate. All these salts were mixed with the same kind of rich mould, each kind in several different proportions. The mixtures were put into small pots, and they were all kept in a uniform temperature and degree of moisture during the experiment." (*L'Hermès*, Nov. 23. 1836.)

Salt has a wonderful Influence in subduing Flame; and when conflagrations are to be extinguished, it would be well if salt were to be mixed with the water. — *James Munro. Castle Ashby, Northamptonshire, Dec.* 20. 1836.

Coal, or Gas, Tar in the Formation of Gravel Paths. — To gardeners unacquainted with the efficacy of coal, or gas, tar in preserving gravel paths from weeds, such as the couch grass (*Tríticum rèpens*), &c., which might have established themselves in the soil previously to the formation of the paths, it may be well to say that a thin layer of this tar, spread equally and entirely over the surface of the ground, previously to laying on the gravel, is certain destruction to whatever roots may remain beneath it, and must, consequently, preserve the gravel free from weeds. Having myself given it a trial, which was attended with the most complete success, I can speak confidently of its merits. I tried it in the formation of a path over a piece of ground which had for years been lying almost neglected, and was become, by the time the path was to be made, one mass of roots. After merely turning over and cleaning the ground once, which is now nearly three years ago, the tar was applied, and not one blade of couch, or other weed, has found its way through it into the gravel above where the tar was spread.

The price, or the smell, which may by many be considered offensive, need not, in the slightest degree, prevent its general application; as the first is so low, that every one who resides within a moderate distance of a gasometer may procure it at about 1*d.* per gallon; and the last, if carefully kept on that ground only which is to be converted into a path, is lost immediately that the work is completed. I feel certain that every gardener who gives it a trial will readily confess that, even during one season, more than its actual cost is saved in the labour that would be required to keep a path in order, formed under similar circumstances, without such a precaution having been taken. — *W. H. B. Bayswater*, 1836.

Cultivation of Potatoes. — It has lately been frequently stated, that, in some counties, there is a great failure of the potato crop. This, I think, may be remedied, another season, by sowing the seed, instead of planting sets. Sets will not last above twelve or fourteen years: after that time, they decline, and hardly return treble the bulk of the potatoes planted. I tried the experiment last year in a small way, and the produce was astonishing. What appears remarkable to me is, that these seedlings produce potatoes of different kinds, and, sometimes, new sorts are procured. I saved the red rough seed, and I had five sorts from it. The following is the method to get them the size of

hens' eggs in one year: — Take a bunch of potato apples of any sort, in November, when they are ripe; hang them up in a warm room during winter; and, at the end of March, separate the seed from the pulp, by putting them into a basin of water until they are soft. Then squeeze them with the fingers; and, after gently pouring off the water, sow the seeds in drills, with the feathers of a goose-quill, in a good bed of earth. When the plants are about an inch high, draw a little earth up to them with a hoe, in order to lengthen their main roots; and, when they are about three inches high, dig them up, and separate them carefully from each other, in order to prepare them for planting out in the following manner: — Prepare a piece of fresh ground by trenching it well; dig up the seedling plants, as before directed, and plant them out in the ground thus prepared, in such a manner as that there may be 16 in. between each plant. As they advance in growth, let them receive one or two earthings up, in order tolengthen the main root, and encourage the shoots underground. By this management, potatoes may be brought to a good size in one year. (*Essex Standard.*) — Sent by *W. B. Oxford, Sep.* 1836.

Filberts are preserved a Year and upwards, with as good a flavour as when gathered from the tree, by packing them in earthern jars, covering them with about an inch in thickness of common salt, and keeping them in a cellar. — *J. J. Shade Hill, Manchester, Dec.* 1836.

Brambleberry, Blackberry, or, as is called in the North, *Bumble-kite, Jelly.* — The process of making this jelly is precisely the same as that for currant jelly, except that only ¾ lb. of loaf sugar is required to 1 lb. of the strained juice, instead of 1 lb., as in the currant jelly. It is much recommended by the faculty, as being a diuretic; and is commonly used in the North of England in tarts. A large spoonful in an apple tart, not only colours it, but gives it a sort of plum flavour. This season has not been favourable to the setting of the jelly, owing to the wet. It is a remarkable fact, that only the jelly from the first crop of these berries is fit for preserving: that from the second crop turns ropy, and will not set; perhaps owing to their berries not ripening so fast as they do earlier in the season, or to the want of sun. — *W. A. Nesfield. Finchley, Nov.* 11. 1836.

Art. II. *Foreign Notices.*

FRANCE.

Pinus montereyénsis, and keeping Pines clear of Insects. — The *Pinus* montereyénsis of the collection of M. Godefroy is the *P. adúnca* of Bosc, Pin de Monte-Rey (California), *Fr.*, of which the history has been given by M. Loiseleur Deslongchamps in the *Nouveau Du Hamel.* The original tree, which still exists at M. Godefroy's, and from which a number of grafts are annually taken, is supposed to be the only one extant of those raised at the Jardin des Plantes, from the seeds sent by Colladon. It was given to M. Godefroy by M. Thouin. Those of the Jardin des Plantes, which were planted out in the open air, are now dead. The tree appears to be too tender for the climate of Paris: but M. Godefroy protects his pines. A fine plant which I possess at Verrières, and which increased in height and thickness in an extraordinary manner, with a magnificent foliage, was so much injured by the frosts at the end of last winter, that it will probably not recover, although there are some of its branches yet alive. Out of thirty-eight fine (herbaceous) grafts which I had made at Barres, only seven remain, the frost having destroyed the others, especially the finest. Nevertheless, the pin de Monte-Rey will, I think, thrive in England, especially in the maritime parts; and also in France, on the northern shores of Brittany. It would appear to be a tree of very large dimensions; but it possesses, besides, an extreme interest on account of its origin; for it is, I believe, the only tree, and perhaps the only plant, procured

by the voyage of La Peyrouse. The French should, therefore, be extremely careful to preserve this species, as a monument to his memory. — *Vilmorin, Oct.* 1837. [The tree of this species in the Horticultural Society's Garden, which is there named *P.* montheragénsis, is a diminutive bush, from almost all the leading buds having been annually destroyed for some years past by insects. The buds of *P.* ponderòsa, and of some other species in the garden, have also been much injured, this and the preceding year, by the Hylúrgus pinipérda; which, we hope, will be a warning to gentlemen in the country who are planting pinetums, to have the rarer species examined (say once a week, from May to September), and the insects picked off. We recommend the rule of once a week, on a particular day, as more likely to insure execution of orders, than trusting to the operation of a general principle on the mind. Every gardener will allow that it is a most desirable thing to pick off insects; but this is quite a different thing from setting about it in an effective manner. The great use of rules is, to insure the carrying of principles into effect. If man were a perfect being, rules would be altogether unnecessary: it would be quite sufficient for him to be acquainted with principles; but, as we are, there is not one of us that does not require the aid of rules to force us to do justice, even to ourselves. Most gardeners have rules as to watering plants; and it would be a great improvement in practice, if they would adopt some, also, with respect to hand-picking insects. One or two women should be kept in every garden for light and cleanly operations of this kind; such as picking off every description of insect, snail, worm, &c.; removing dead leaves, dead roses, and other flowers, tying up plants, &c. — *Cond.*]

INDIA.

The Madras Agricultural and Horticultural Society, apparently one of the most prosperous institutions of the kind in our Indian territories, held their general annual meeting on June 17. After the usual routine business had been gone through, a report of the garden committee was read. From this it appears that the Society have a garden of upwards of thirty acres in extent, which they took possession of in February, 1836; and that, since that period, they have been occupied in laying out the beds, making roads, paths, digging wells, and forming tanks above the level of the garden, in order to be able to irrigate every part of it on the surface; constructing a superintendent's house, with a seed-house, and a small hot-house for raising plants, &c. The establishment consists of one superintendent, or director, two head gardeners, eight second gardeners, and twelve common gardeners, besides labourers, boys, women, &c. To give an idea of the mode of proceeding of this society, and the plants they intend to cultivate, &c., we give the following extract, which we do the more readily, because we understand the Society's agents are now on the look out for some British gardeners, who are willing to settle themselves at Bangalore:—"The Society has thought it desirable to have a large garden, because the extremely favourable climate of Bangalore plainly indicates that a garden constructed on strictly English principles must be one of the readiest means of effecting the objects of the Society; and that it may, moreover, afford a useful focus for the experiments of other societies with similar objects in view.

"The committee would now call the attention of the meeting to the horticultural operations of the Society. Most of the approved English vegetables have been cultivated to a small extent, much smaller than it is intended shall be the case in the ensuing season; but that part of the garden which, from its position and depth of soil, has been selected as best adapted to the cultivation of culinary vegetables, had been formerly, when in the hands of the natives, used for the cultivation of the *Arachis* hypogæ'a, or pig-nut, the smallest seed of which, if left in the ground, will grow; and, although the soil was carefully cleared, it was continually appearing above ground, and assisted by that most troublesome of all weeds, the *Cyperus* rotúndus, also cultivated there for sandal, impoverishing the soil, and preventing the growth of exotic

plants less adapted to the climate than themselves. The first two crops could, therefore, scarcely be looked upon in any other light than for the purpose of clearing the ground. A considerable space of the ground was, also, taken up by a plantation of sugar-cane, which remained, by agreement, for some time after the garden had been given to the Society, and which, of course, exhausted the soil of that part most materially. These circumstances, together with the fact that the whole garden had been for a long time over-cropped, without receiving sufficient manure in return, will make it evident that the principal efforts of the committee ought to have been directed (as they have) towards rendering the soil in a fit state for the successful cultivation of exotic and Indian vegetables, &c.; as, by attempting it in a poor soil, and obtaining poor productions, the natives would be dissuaded from following our system of gardening; whereas a first successful result would be of great consequence, and might be the means of effecting one of the principal objects of the Society; namely, inducing the natives to come into the garden to observe and adopt their methods of cultivation.

"The Agricultural and Horticultural Society of India have supplied us liberally with cotton seeds of various descriptions. Part of these have been sown, and have succeeded, in the garden; and the remainder have been sent to the chief commissioner, who has kindly promised to circulate them in the different talooks of Mysore; and from whom, together with the assistant commissioners, the Society have always received great assistance. A considerable quantity of American cotton seed sent by the same Society is now on the road from Madras for distribution to any wishing to cultivate it: an early application for it to the secretary is recommended, as the best season for planting it, the beginning of the rain, is fast approaching. A considerable quantity of Cape vegetable seeds were also sent from Calcutta. Part of these have been sown, and proved to be excellent: the remainder has been kept for distribution to any members applying for them. Some flower seeds were also selected, and sent by Dr. Wallich. They have all been sown: most of them have thriven, and are now in flower. The thanks of the Society are also due to the Madras Society for some English seeds, which, unfortunately, did not prove to be good; a basket of English plants, out of which the cherries only are thriving, and some New South Wales potatoes (now exhibited), which, although allowed to obtain their full size, are not likely to displace the variety at present cultivated in Bangalore. Colonel Williamson lately kindly sent some Scotch red apple potatoes: they have all been planted, and a few have already sprouted. The Society is also considerably indebted to Mr. Fisher at Salem for his welcome present of 1000 coffee plants, and some fine mango grafts, all of which have prospered. Many ornamental plants received from Coorg have succeeded admirably. The secretary has introduced, by seed or plants, about 50 or 60 species of Neilgherry plants: they have not been generally, if at all, cultivated in any part of India. Most of these plants will be propagated in the ensuing season, sufficient for distribution to a small extent. Two of the fruits amongst the Neilgherry plants will prove worthy of consideration: one a yellow raspberry, which, with moderate care, is capable of becoming an excellent fruit; and the other the small but well-tasted alpine strawberry. The good success of these plants, as well as two of the Scotch pine, and two of the Himalaya firs, and a very luxuriant plant of the *Ulex* europæa or common furze, and one of an alpine anemone, are sufficient proofs of the mild climate of Bangalore, and the advantages it possesses over most parts of India. A considerable quantity of seed has been saved from some Bourbon cotton plants, placed in the garden by Captain Hunter, which have thriven in a most remarkable manner, giving a great produce, declared by good judges to be as fine as they had ever seen. From the success of the plants, the committee is inclined to recommend the transplantation of the Bourbon plants, being convinced, from experiment, that the labour is more than counterbalanced by the increased produce. The manager will willingly communicate to those who may wish it what he considers the best mode of

cultivating this cotton. There are also a few plants, raised from American green cotton seed, now in full bearing. They promise to be a valuable variety, as, notwithstanding the unfavourableness of the season, the produce of each plant is great, the pods very large, with but few seeds, and the staple apparently excellent: specimens of both this and the Bourbon are now exhibited. Seeds of two varieties of tobacco; the Virginia and Cabul, sent by Mr. Fischer, have been shown, and are progressing; a third, called the Shadoway tobacco, which grows to the height of 7 ft. and 8 ft., was received a few days ago from Dr. Wight, having been forwarded to him from Calcutta: they have also been sown. Dr. Wight was also kind enough to send some seeds of the *Rhèum Emòdi*, or Turkey rhubarb, all of which seeds have proved good. These plants, if they succeed ultimately, of which there is little doubt, will be a valuable acquisition. Dr. Wight also sent some seeds of the prango, used as hay in Cashmere: they have not yet vegetated, although, on taking up some of the seeds, they appeared to be fresh." (*Madras New Times*, June 17. 1837.)

AUSTRALIA.

The late Mr. Cunningham. — A handsome plain tablet has been erected in St. Andrew's Scots church to the memory of Mr. Richard Cunningham, government botanist of New South Wales, who perished in the second expedition of Major Mitchell into the interior. Mr. Cunningham's zeal in pursuit of botanical information was unbounded; and, unquestionably, led to the fatal termination of his valuable life. The dangers of losing oneself in the bush of this country are two well known to be particularised; but all these were forgotten in the ardent desire to investigate the botanical treasures of the colony. Mr. Cunningham was universally esteemed, and his fate was universally deplored; while the unwearied exertions to recover him evinced the high esteem in which he was held by his surviving fellow-travellers. Had his life been spared, he would have been instrumental in diffusing a knowledge of the productions of this country amongst the learned men of Europe. The only consolation that the colonists enjoy is, that his highly gifted brother has succeeded to this situation held by him, whose talents and perseverance have already added much to our knowledge of the interior, and who, it is to be hoped, will devote some of his time to the same object.

The tablet erected to Mr. Cunningham's memory is of beautiful white marble, exquisitely polished; and the inscription is tastefully disposed, and admirably proportioned. It was executed in the statuary yard of Sir Francis Chantry, under the direction of Allan Cunningham, the celebrated poet, and principal manager for that distinguished artist.

Inscription. — "Richard Cunningham, Government Botanist of this Colony, attached to an Explorative Expedition into the Interior, under the command of Major Mitchell, Surveyor-General, wandered, in his enthusiasm for Botanical investigation, from his companions; and, losing himself in the desert country on the Bogan River, fell into the hands of the native tribes, by whom he was unfortunately killed, *about the 25th of April*, 1835, *in the Forty-second Year of his Age*. This Tablet is erected as a lasting and affectionate tribute to his memory, by Allan, his only Brother." (*Sydney Herald*, April 3. 1837.)

Art. III. *Domestic Notices.*

ENGLAND.

Baron Hügel's new Australian Plants. — A young gardener from Baron Hügel was in England the first three weeks of October, with fifty new species of plants for sale or for exchange. A list of these plants is below.

In the following list, † signifies new genera; ‖, new species; *, species which have not before been sent to Europe in a living state; K. G. S, colony of King George's Sound; N. I., Norfolk Island; N. S. W., New South

Wales ; N. Z., New Zealand ; S. R., colony of the Swan River. The price at which these plants were sold or exchanged to the London nurserymen varies from 5*s.* to 10*l.*, the latter the price charged for Bánks*ia* Hügèl*ii* and Diplopéltis Hügèl*ii*.

The new genera and species are in part described in *Enumeratio Plantarum, quas in Novæ Hollandiæ Orâ Austro-occidentali collegit Carolus L. B. Hügel ;* Vienna, 1837 ; and partly in the *Botanischen Archiv der Gartenbaugesellschaft zu Wien.* Vienna, 1837.

* *Acàcia* biflòra *R. Br.*, S. R.
|| cuneàta *Benth.*, S. R.
* spectábilis *Cunningh.*, N. S. W.
|| Actinòtus leucocéphalus *Benth.*, S. R.
* Astèlia Bánks*ii* R. Br., N. Z.
|| Bánks*ia* Hügèl*ii* R. Br. msc., N. S. W.
* ilicifòlia *R. Br.*, K. G. S.
* coccínea *R. Br.*, K. G. S.
* Menziès*ii* R. Br., S. R.
|| Bossiæ*a* eriocárpa *Benth.*, K. G. S.
* Burtòn*ia* sessilifòlia *Dec.*, K. G. S.
* Cartonèma spicàtum *R. Br.*, K. G. S.
|| Candóllea Brunò*nis* Hugel, S. R.
|| Hügèl*ii* Endl., S. R.
* Cordylìne austràlis *Endl.*, N. I.
|| Cryptándra *a*rbutiflòra *Fenzl.*, S. R.
* Diplopl*æ*na Dampièr*i* Desf., S. R.
† Diplopéltis Hügèl*ii* Endl., S. R.
|| Dodonæ*a* ceratocárpa *Endl.*, K. G. S.
* pinnàta *Smith*, N. S. W.
* Gáhn*ia* procèra *R. Br.*, N. Z.
* Grevíll*ea* bipinnatífida *R. Br.*, S. R.
* ferrugínea *Sieb.*, N. S. W.
|| Gompholòbium aristàtum *Benth.*, S. R.
* adúncum *Cunningh.*, N. S. W.
* Gualthèr*ia* antípoda *R. Br.*, N. Z.
* Hàke*a* cristàta *R. Br.*, S. R.
* denticulàta *R. Br.*, K. G. S.
* tuberculàta *R. Br.*, S. R.
|| Hòve*a* púngens *Benth.*, K. G. S.
|| *H*elichrỳsum macránthum *Benth.*, S. R.
|| Hemiándra rupéstris *Benth.*, S. R.
|| Jacksò*nia* Sternberg*iàna* Hügel, S. R.
|| Labichæ*a* lanceolàta *Benth.*, S. R.
* Lagenóphora Fórster*i* Endl., N. Z.
* Logà*nia* *l*igústrina *Cunningh.*, N. Z.
* Leucopògon verticillàtus *R. Br.*, K. G. S.
|| Melaleùca Hügèl*ii* Endl., S. R.
* Melícope ternàta *Cunningh.*, N. Z.
|| Oxylòbium capitàtum *Benth.*, S. R.
|| Pelargònium littorále *Hügel*, S. R.
* Persoò*nia* myrtillòides *Sieb.*, N.S.W.
† Physolòbium elàtum *Benth.*, S. R.
* Pittósporum bracteolàtum *Endl.*, N. I.
* Podólepis aristàta *Benth.*, S. R.
† Pronà*ya* élegans *Hügel*, S. R.
* Psychótria mìnor *Cunningh.*, N. Z.
* Stercùlia *a*cerifòlia *Cunningh.*, N. S. W.
* Xanthorrhœ*a* mìnor *R. Br.*, N.S.W.
† Zích*ya* Móll*y* Hugel, S. R.

Of the above plants, some are very splendid, and others very remarkable. *A*càcia spectábilis, and the grevilleas and hakeas, may be classed among the former ; and Bánks*ia* Hügèl*ii* among the latter. The leaves of this banksia are lanceolate, with two acute lobes near the upper end, somewhat in the manner of the lobed leaves of Quércus vìrens. Zích*ya* Móll*y*, a leguminous plant, (the specific name of which, M. Hügel's gardener informs us, is the Christian name, and the generic name the surname, of Countess Molly Zich, a zealous botanical amateur at Vienna,) resembles a kennedya, and forms a very ornamental climber. As all the above plants may be considered as now introduced to Britain, they will appear in the *Second Additional Supplement* to our *Hortus Britannicus*, which, we expect, will be published about Christmas next. — *Cond.*

*Amhérst*ia *nóbilis*. — This noble tree, which belongs to Leguminòsæ, and of which there is an excellent figure in Wallich's *Plantæ Rariores*, has been introduced into England, in a living state, this year, by the Duke of Devonshire's collector, Mr. Gibson, who returned from India in August last. Mr. Paxton informs us (Oct. 11.) that the plant is very healthy, and has already made eight or ten new leaves. He is of opinion that it will be found of easy culture.

The collection of Orchidàceæ brought home by the Duke of Devonshire's collector includes a number of new dendrobiums, aerides, and saccolobiums,

with species of several of the less beautiful genera. They are all in excellent condition. — *J. P. Chatsworth, October* 11. 1837.

Málva Fulleriàna.— A new species or variety, from the island of Antigua, is said to have flowered for the first time in August last, in the green-house of Mr. Fuller of Worthing. The flowers are said to be numerous, very splendid, and of the size of a breakfast cup. (*Hull Journ.*, as quoted by the *Sheffield Iris*, Oct. 17. 1837.)

Agàve americàna. — A specimen of this plant is just now in flower in the garden of Mr. Collinge, Grange Road, in the town of St. Pierre Port, Guernsey. It has been planted out about twenty-five years. Its height is nearly 30 ft., and it is still growing. The flowers of the lowest branches are just beginning to expand; so that, if the weather prove favourable, it may continue to bloom till Christmas. — *W. C. jun. St. Pierre Port, Guernsey, Sept.* 27. 1837.

The Four heaviest Gooseberries grown in England in 1837 are, red, Companion, 23 dwt. 12 gr., grown by Mr. Baker, Staffordshire; yellow, Leader, 22 dwt., by Mr. J. Richardson, Davenham; green, Overall, 20 dwt., by Mr. J. Richardson, Davenham; white, Tally-ho, 23 dwt. 4 gr., by Mr. J. Brotherton, Wistaston. (*Newsp.*)

A Mushroom, attaining the almost incredible size of 3 ft. 1 in. in circumference, and from which very nearly a pint of ketchup was extracted, was last week gathered in a field belonging to J. P. Burman, Esq., Henley in Arden, Warwickshire. (*Morn. Chron.*, Sept. 12.)

SCOTLAND.

The Royal Highland and Agricultural Society of Scotland held their grand annual meeting at Dumfries, on Oct. 1., when many premiums were awarded for live stock, various descriptions of produce, implements, roots, and seeds, &c. Among the implements exhibited were, a turning-machine, for making rake and fork handles; a machine attached to a common cart, for filling in and rolling the ruts of roads; a subsoil plough, convertible into a draining and trenching plough. Among the roots and seeds exhibited were, a new potato, from Chile; a new white carrot, the Rochan potato, the golden globe mangel wurtzel, *Vícia villòsa*, the winter oat, Alsike clover from Sweden; *Pìnus uncinàta* and pyrenàica, obtained by Messrs. Lawson and Son from the Pyrenees, through the kindness of Sir John Nasmyth, Bart.; specimens of the *Pìnus austrìaca* and *P.* sylvéstris, exhibiting the superiority of growth of the former species.

A Swedish Turnip, grown at Balgone, on the home farm of Sir George Sutty, Bart., near North Berwick, by his bailiff, Mr. Scougall, was taken up on the the 30th of Aug. last, when, of course, it was not half the size which it would have attained, and found to weigh 7 ¾ lb., and to measure 21 in. round. (*Scotsman*, Aug. 30.)

A Globe Turnip, on the same farm, taken up on the same day, weighed 21½ lb., and measured 41 in. in circumference. This turnip, and the one mentioned above, were sent to the *Scotsman* newspaper office, and there weighed and measured, so that there cannot be a doubt as to the correctness of this statement. Should Mr. Scougall see this, we shall be very much obliged to him if he will weigh and measure some of his turnips, when fully grown, and send us the particulars, together with an estimate of the bulk and weight per statute acre, the price they would sell for per ton, and the quantity of beef, mutton, butter, or milk, which it is estimated a ton of each kind would produce. — *Cond.*

A white Globe Turnip, grown by Mr. Scougall, is at present exhibiting at Messrs. Dodd's, seedsmen, Haddington, weighing 30½ lb., and measuring 40 in. in circumference. (*Scotsman*, Oct. 11. 1837.)

Two immense Cabbages were lately exhibited at the general meeting of the Falkirk Horticultural Society; the one an early cabbage, weighing 34 lb., and the other a late cabbage, 4 ft. in circumference. The person who grew them (Mr. John Johnstone, a bootmaker) is said to have raised a prize cow cabbage upwards of [?] 18 ft. round. (*Scotsman*, Sept. 27. 1837.)

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IRELAND.

Yúcca *aloefólia*. — A beautiful drawing of this species of *Yúcca*, by J. W. Bennett, has been kindly sent us by the Countess Dunraven, taken from a plant which, on Oct. 6., was in full flower in the gardens at Adare, and from which *fig.* 128. is engraved.

The plant, or rather tree, measures in height 28 ft.; the girt of the trunk, at 10 ft. from the ground, is 17 in.; and, at the height of 20 ft., the trunk divides into six massy branches, each terminating in a pyramid of flowers. In the drawing, only four of these branches are exhibited; because a greater number could not be seen from any one point of view. We have never before heard of anything like so splendid a specimen of this species of *Yúcca*; and beg to return our best thanks for the drawing, and the other particulars sent along with it. — *Cond.*

Art. IV. *Retrospective Criticism.*

Errata. — In p. 466., line 4. of the article Denmark, for "five or six years," read "part of 1824–5–6–7;" and, in line 16., for "The first melon was cut on August 30.," read "A melon of 30 lb. weight was cut on August 30." As farther corrections to this article read, "melons have been produced for ten years back, sometimes in May; white Chasselas grapes in July, and black Hamburg grapes in August; forced peaches by the end of June, or in July." — *Jens Peter Petersen. Copenhagen Royal Gardens, Rosenburgh, Oct.* 2. 1837.

In p. 439. line 5. for "Wilton Park colliery," read "Witton Park olliery;" in p. 441. line 6. for "mansion is," read "mansion of John Backhouse, Esq., is." — *J. B. W. Kiplin, Catterick, Oct.* 15. 1837.

Art. V. *Queries and Answers.*

An Insect on the Scotch Pine. — In walking over my nursery this afternoon, I was surprised to see a fine thriving piece of Scotch pines with apparently nearly all their leading shoots broken down, and in many instances dead. On examination, I found this devastation had been occasioned by a species of beetle, which had bored down the middle of each shoot, and which was, in many instances, still continuing its ravages downwards. I never observed the like before; and certainly my pines have not been previously infested with this insect. I send you a number of specimens, in many of which you will detect the enemy. I should feel obliged by the name of the insect, and by being informed if any means can be used to prevent its spreading. — *An Enquirer. Oct.* 5. 1837.

The insect sent by "An Enquirer," is the small wood-boring beetle Hylúrgus pinipérda, described in the *Arboretum Britannicum*, No. XLV., under the article *P*inus, p. 2141.; where the only method recommended for its destruction, is to collect the trees or branches which it has infested, and to burn them. A little enquiry into the natural history of this beetle may, perhaps, give a clue to some other more effectual remedies. The insect is now in the perfect state; and it is for the purpose of obtaining food, and not for forming a place for the depositing of its eggs, that it eats the young shoots. Where, then, are the early stages of the insect's life passed? Not in the trees now infested: they are too hardy and well kept, and too young, to allow this to be likely. A careful search should, therefore, be made amongst the Scotch pine trees fully grown (in the neighbourhood of the nursery, if not growing in the nursery) for the trees whose *trunks* are infested by the grubs; which, if unmolested, will next year turn to the perfect beetles, which will swarm forth to destroy the young shoots of all the adjoining pines. — *J. O. W.*

P*inus cebenénsis.* — The *P*inus cebenénsis signifies, I think, Pin de Cevennes; but what the Pin de Cevennes is, I know not. It would be necessary to know from whom the tree thus named was received. As I have not seen the name or the description in any of our authors, I presume,

therefore, that it is only some nurseryman's name; and I should not be at all surprised if it were simply a *Pinus sylvéstris* which had been brought from Cevennes. — *V. Paris, Oct.*, 1837. [The plant in the Chiswick Garden of this name is evidently *P. Larício*; but, as we were anxious to know, if possible, what species or variety the name was intended to be applied to, we wrote to M. Vilmorin, and the above is his answer. — *Cond.*]

Making a Peach taste of Wormwood. —If I had seen Vol. XII. p. 52. of the *Gardener's Magazine* sooner, I should not have waited till now to satisfy, as well as I could, the desire of your correspondent, A. B., on the "Manner of making a Peach taste of Wormwood." The day has gone by for people believing the impositions practised by a few gardeners to deceive the multitude; but, by attentively studying the process of vegetation, certain phenomena will appear, which are not so easy to explain, even with the assistance of physiology; and it is still more difficult to give a decided opinion on the subject. For example: at first sight, the assertion of Mr. John Murray, of giving the smell of the onion to the rose, by being planted near it, appears ridiculous; and yet, even the celebrated De Candolle, in his *Physiologie Végétale*, omits giving an opinion on the subject; a proof that there is room for improvement in vegetable physiology, and particularly as it regards smell and taste. For my part, I can tell you, as a fact, and a well established one, that all the wine merchants abstain from going to a particular part of the province of Vicenza for their wine; and the reason of this is, that the wine there smells of the walnut, because the peasantry have a custom of training their vines on walnut trees, instead of using vine props. This smell may arise from different causes; and it is a remarkable fact, that the walnut does not always give its flavour to the grapes it supports, but, in general, only to those which have grown on light and dry soils, when the vine has received any bruise, or wound, such as by a severe shower of hail, or by the roots having been injured by the plough. It thus appears to me, that, wherever the wine tastes of the walnut, the spongioles of the vine could not have been in a healthy state: the greater part of them must have been decayed; and, from the connexion between the root and the stem, when the hail injures the shoots of a plant, even the fibrils of the roots suffer, and are probably destroyed. It is evident that the mutilation which the vine sustains by the plough must also destroy the fibrils; and, in both cases, a section of the main root becomes the opening through which the juices of the soil are absorbed; and, instead of these juices being digested and properly prepared by the spongioles, they are conveyed to the plant through the decayed or mutilated roots, either by capillary attraction, or the absorbent power of the roots, in a greater quantity, and in a comparatively raw state. As the roots of the walnut which communicate with water are known to give it their smell, all the moisture which comes in contact with the roots of the vine is impregnated with this flavour; and, being absorbed and transmitted, without digestion, through the truncated roots, it gives the same flavour to the grapes. In the *Nouveau Cours d'Agr.*, under the head of "Parsley," you will see it remarked, that if the celery (sedano) is covered with new dung, it will taste of it. I have mentioned this in a paper which I have written on celery, in the *Giornale Agrario Lombardo-Veneto;* and shown how much the French gardeners are in error, in taking up or transplanting celery; by which method few or none of the plants have their roots entire. Keeping these examples and principles in view, and following the same process, who can say that it is impossible that the smell of the onion may not be given to the rose, and the taste of wormwood to the peach, &c.? — *G. Manetti. Jan.* 4. 1837.

END OF THE THIRTEENTH VOLUME.

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